Read November 16, 1769.

LXV. *Aſtronomical Obſervations made by Order of the* Royal Society, *at* Prince of Wales's Fort, *on the North-Weſt Coaſt of* Hudſon's Bay. *By* William Wales *and* Joſeph Dymond.

Mem. The Thermometer marked A was hung within the ſouthern, or lower Obſervatory; in ſuch a Part as we judged would be leaſt affected by the Fire; cloſe to, and with its Ball exactly of the ſame Height with, the Quickſilver in the Baſon of the Barometer: That marked B was hung without Doors, on the north Side of the Obſervatory.

The Floor of the Obſervatory might be above 50 Feet above the Level of the Sea at Low-water Mark.

1768 Septemb.	Equal altitudes. Times by the clock. Lower Wire	Middle Wire	Upper Wire	Paſſed the Meridian.	Zenith diſtance	Barometer.	Thermometers. A	B	Phænomena and Circumſtances. Obſerver	
	′ ″	h ′ ″	′ ″	h ′ ″	° ′	Inches				
☿ 14	17 15	19 20 54	24 33	23 49 18½	75 40	29,56	38½	38	W. ⊙'s U. L. ⊙'s L. L.	easterly
	21 37	25 16	28 55							
♃ 15	15 59	4 12 18	8 37		75 40	29,61	46	42½	W. ⊙'s L. L. ⊙'s U. L.	westerly
	20 24	16 44	13 5							
☉ 18	At noon wound up the clock.								D.	
☽ 19	14 54	19 18 36	22 10	23 54 7	78 13	29,97	37	34	D. ⊙'s U. L. ⊙'s L. L.	
	19 15	22 56	26 37							
	33 8	36 55	40 39		76 0	29,98	37	34	D. ⊙'s U. L. ⊙'s L. L.	easterly
	37 37	41 25	45 11							
♂ 20	9 36	4	2 7		76 0	30,07	49	44	D. ⊙'s L. L. ⊙'s U. L.	
	14 3	4 10 19	6 32	23 55 00,-						westerly
	28 1	24 16	20 37		78 13	30,07	49	44	D. ⊙'s L. L. ⊙'s U. L	
	32 19		25 1							
	36 56	19 40 44			76 0	30,06	38½	39	D. ⊙'s U. L. ⊙'s L. L.	easterly
	41 26									
♃ 21					76 0	30,10	56	56	D. ⊙'s L. L. ⊙'s U. L.	westerly
	4 33	4	12 3	23 55 57,-						
	15 47	19 19 30	23 11		79 0	29,97	45	44	D. ⊙'s U. L. ⊙'s L. L.	
	20 13	19	27 27							
	40 42	19 44 34	48 22		76 0	29,96	46	45	D. ⊙'s U. L. ⊙'s L. L.	easterly
	45 16	49 7	52 54							
	0 47	20 4 44	8 41		73 40	29,95	47	47	D. ⊙'s U. L. ⊙'s L. L.	
	5 27	9 28	13 25							
♃ 22	45 26	3	37 27		73 40	29,89	62	65	D. ⊙'s L. L. ⊙'s U. L.	
	50 8	46 9	42 9							
	5 38	4 1 42	58 3		76 0	29,89	62½	65	D. ⊙'s L. L. ⊙'s U. L.	westerly
	10 2	6 18	2 32							
	30 36	26 52	23 5		79 0	29,89	63	65	D. ⊙'s L. L. ⊙'s U. L.	
	34 57	31 18	26 37							

♂ Sept. 27 From the preceding obſervations, I have found that the clock is gaining 1′ 18″ per day on mean ſolar time, and in conſequence of that is now about 10′ 9″ too faſt: therefore at 20ʰ we ſtopped it, altered the pendulum to make it go ſlower, and ſet it to nearly mean time, W. W.

1768		Equal altitudes. Times by the clock. Lower Wire.		Middle Wire		Upper Wire		Paſſed the Meridian.			Zenith diſtance		Barometer.	Thermometers. A	B	Obſerver.	Phænomena and Circumſtances.	
September		′	″	h	′ ″	′	″	h	′	″	°	′	Inches.					
☿	28	38	24	20	42 54	47	22	23	52	16½	71	40	29,96	43½	44	W.	⊙'s U. L. ⊙'s L. L.	easterly
		43	46		48 20	42	55											
♃	29	59	50	2	55 15	50	43				71	40	29,98	56	55	W.	⊙'s L. L. ⊙'s U. L.	westerly
		5	14	3	0 43	56	17											
♀	30	47	22	19	51 18	55	15	23	53	13½	78	0	29,82	36	35	W.	⊙'s U. L. ⊙'s L. L. ⊙'s U. L. ⊙'s L. L.	easterly
		52	7		56 4	0	1											
		8	6	20	12 18						76	0						
		13	6		17 17	21	27											
♄	Oct. 1			3		40	24	23	53	46¼	76	0	29,72	49½	50½	W.	⊙'s L. L. ⊙'s U. L. ⊙'s L. L. ⊙'s U. L.	westerly
		53	19	3	49 21	45	25				78	0						
		58	4		54 9	50	14											
		42	9	19	46 5	50	0				79	0	29,34	41	41	D.	⊙'s U. L. ⊙'s L. L.	easterly
		46	52		50 49	54	44											
		59	46	20	3 50	7	52				77	0	29,33	41½	41	D.	⊙'s U. L. ⊙'s L. L.	
		4	36		8 43	12	45											
⊙	2	At noon wound up the clock.														D.		
		41	57	3	37 52	33	49				77	0	29,18	50	50½	D.	⊙'s L. L. ⊙'s U. L.	westerly
		46	48		42 44	38	43											
					55 42	51	47				79	0	29,18	50	51½	D.	⊙'s L. L. ⊙'s U. L.	
		4	20	4	0 26	56	33											
⊙	5	At noon wound up the clock.														W.		
♃	13	32	35	20	37 5	46	55				78	20	29,86	28	26	W.	⊙'s U. L. ⊙'s L. L.	easterly
		37	54															
		52	49	20	57 38						76	20	29,87	29	26½	W.	⊙'s U. L. ⊙'s L. L.	
		58	32	21	3 26													
♀	14	2	18	2	57 26			0	0	53¼	76	20	29,90	41	37	W.	⊙'s L. L. ⊙'s U. L. ⊙'s L. L. ⊙'s U. L.	westerly
		8	2	3	3 15													
		22	54		18 21	13	54				78	20						
		28	14		23 47	19	21											
⊙	16	At noon wound up the clock.														D.		
		37	54	20	42 28	46	59				79	0	30,19	21	20	D.	⊙'s U. L. ⊙'s L. L.	easterly
		43	24		47 57	52	30											
☽	17			3	16 58	12	20	0	2	55,–	79	0	30,20	31	28½	D.	⊙'s L. L. ⊙'s U. L.	westerly
		27	2			17	57											
⊙	23	At noon wound up the clock.														W.		
♂	25	Stopped the Clock 24′ 11″ and ſcrewed down the ball of the pendulum ½ of a turn, W. W.																
		39	31	20	44 28	49	30	23	44	47½	80	0	29,78	15	8	W.	⊙'s U. L. ⊙'s L. L.	easterly
		45	28		50 24	55	44											
		2	23	21	7 53:	13	32				78	0	29,77	15	7½	W.	⊙'s U. L. ⊙'s L. L.	
		9	0		14 43	20	28											

1768 October.	Equal altitudes. Times by the clock. Lower Wire.	Middle Wire	Upper Wire	Passed the Meridian	Zenith distance	Barometer.	Thermometers. A	B	Observer.	Phænomena and Circumstances.
	′ ″	h ′ ″	′ ″	h ′ ″	° ′	Inches				
♅ 26	19 48	2 14 6			78 0	29,64	19	15	W.	⊙'s L. L. ⊙'s U. L. westerly
	26 22:	20 53	15 20::							
	43 15	2 38 9	33 0:		80 0	29,63	18½	14½	W.	⊙'s L. L. ⊙'s U. L. very hazy
	49 12	44 14	39 12							
⊙ Nov. 6	57 45	8 1 15	4 42	13 19 27¼	71 0	29,63	3	— 4½	W.	Aldebaran easterly
	8 2	11 32	14 59		69 40					
		18 27 21	30 51		69 40	29,56	— 3	—11	W.	Aldebaran westerly
	34 14	37 42	41 10		71 0					
♅ 16	37 55	8 41 35	45 12	12 44 3¾	61 20	29,60	+ 9	— 3	D.	Aldebaran easterly
	56 56	9 0 40	4 21		59 0					
	31 10	16 27 28	23 45		59 0	29,60	+ 1	— 8	D.	Aldebaran westerly
	50 14	46 32			61 20					
♃ 17	24 1	7 27 27	30 56	12 40 34″,-	70 20	29,73	— 1	— 9	D.	Aldebaran easterly
	36 53	40 23:	43 52		68 40					
		53 15	56 46		67 0					
	31 21	17 27 50	24 24		67 0	29,83	— 7	—12	D.	Aldebaran westerly
	44 15:	17 40 44	37 17		68 40					
	57 7	53 40:	50 13:		70 20					
♀ 18	1 52:	8 5 27	8 56	12 37 1,7	65 0	29,88		—14	D.	Aldeb. easterly, hazy
	12 11	7 8 38	5 6		65 0	29,90	— 3	—15	D.	Aldebaran westerly
♄ 19	2 9	9 6 17	10 43		57 0	29,85	— 9	— 6	D.	Aldebaran easterly
	17 31	21 30	25 27		55 20				D.	Ditto Ditto

⊙ 27 At noon I went to wind up the clock, but found it had ſtopped at 6ʰ 48′. I ſuppoſe it had been ſtopped by the cold laſt night, and therefore I kindled a fire to warm it before it was ſet a going. At about 6ʰ 58′ by the alarm ſet the regulator a going and wound it up. J. D.

♂ Dec. 6	13 28	6 16 58	20 24	11 22 11,1	69 20	29 94	—11½	—23½	W.	Aldebaran easterly
	26 19	29 49	33 18:		67 40					
	18 3	16 14 32			67 40	29 98	—16	—26	W.	Aldebaran westerly
	30 56	27 24			69 20					
♅ 8	6 22	6 9 52	13 19	11 15 6⅓	69 20	30 21	— 2	—15	W.	Aldebaran easterly
	23 52	16 20 22	16 53		69 20	30 14	— 4½	—14	W.	Aldebaran westerly
♄ 10		6 10 21	13 49	11 7 57,3	68 20	29 58	—10	—23½	W.	Aldebaran easterly
	17 11	6 20 41	24 9		67 0					
	58 43½	15 55 13			67 0	29 51	—23	—32	W.	Aldebaran westerly
	8 4	16 5 34	2 6		68 20					
⊙ 11	3 23	6 6 55		11 4 29,8	68 20	29 50	—27	—37	D.	Aldebaran easterly
	16 21	19 51	23 20		66 40					
		15 49 9			66 40	29 39	—31	—42	D.	Aldebaran westerly
	5 38	16 2 3			68 20					

At 21ʰ I found that the regulator had ſtopped at 20ʰ 16′ 3″, notwithſtanding the fire was very good; and by agreement with Mr. Wales, I let the fire go out, the ſtove being obliged to ſtand ſo near the ſide of the obſervatory that a little extraordinary fire would endanger the ſame, it having twice melted the lead at the back already; I alſo took of the weight off the regulator to eaſe it, and let it ſtand. J. D.

1769	Equal altitudes. Times by the clock.				Zenith distance	Barometer.	Thermometers.		Phænomena and Circumstances.	
March.	Lower Wire	Middle Wire	Upper Wire	Passed the Meridian		Inches	A	B	Observer	
	′ ″	h ′ ″	′ ″	h ′ ″	° ′					
☿ 1	39 1	7 43 50	18 39	10 7 37¾	53 0	29,76	—22	—30	W.	Regulus easterly
	33 33	7 58 44	3 58		51 40					
	1 44				51 40	29,68	—28	—34	W.	Regulus westerly
	36 13	12 31 25	26 37		53 0					
	N. B. These were made by the assistant Clock.									
♂ 2	Set Mr. Ellicott's clock a going.									
☿ 2	32 48	9 36 25	39 59	13 56 26¼	57 20	29,81	+ 2	0	W.	Arcturus easterly
	3 29	47 7	50 44		56 0					
	29 22	17 25 43½	22 7		56 0	29,80	—10	—17	W.	Arcturus westerly
	30 6	36 29	32 55		57 20					
♃ 30	5 3	20 8 52	12 40		70 40	29 79	+ 1	+ 8	W.	⊙'s U. L. ⊙'s L. L. easterly
	9 37	13 28	17 16							
♀ 31	6 50	4 2 59	59 11	0 7 45,2	70 40	29,83	+14	+15	W.	⊙'s L. L. ⊙'s U. L. westerly
	11 25	7 35	3 40							
☉ April 2	43 24	19 47 4	50 42		72 20	29,85	— 8	— 5	D.	⊙ s U. L. ⊙'s L. L. easterly
	47 45	51 25	55 5							
☽ 3	29 38	4 25 57	22 17	0 8 12,2	72 20	30,00	+ 5	+12	D.	⊙'s L. L. ⊙'s U. L. westerly
	34 0	30 20	26 40							
♂ 4	40 56	19 44 6	48 17		72 0	30,12	— 6	— 3	D.	⊙'s U. L. ⊙'s L. L. easterly
	45 17	48 58	52 37							
☿ 5	32 29	4 28 45	25 8		72 0	30,12	+12	+20	D.	⊙'s L. L. ⊙'s U. L. westerly
		33 15	29 35							
	38 28	19 42 7	45 44		72 0	30,08	— 1	+ 8	D.	⊙'s U. L. ⊙'s L. L. easterly
	42 50		50 6							
♃ 6	35 16	4 31 36	28 0	0 8 33,4	72 0	30,14	+14	+16	D.	⊙'s L. L. ⊙'s U. L. westerly
	39 36	35 57	32 21							
♄ 8	20 28	19 24 2	27 35		73 20	30,00	+ 6	+12	W.	⊙'s U. L. ⊙'s L L. easterly
	24 43	28 17	31 49½							
☉ 9	53 58	4 50 23	46 51	0 8 50,8	73 20	29,99	+22	+27	W.	⊙'s L. L. ⊙'s U. L. westerly
	58 13	54 39	51 7½							
☽ 10	26 16	19 29 51	33 24		72 0	30,20	— 7	— 6	W.	⊙'s U. L. ⊙'s L. L. easterly
	30 32	34 8	37 41							
♂ 11	48 41	4 45 5	41 31	0 9 7,6	72 0	30 24	+ 8	+12	W.	⊙'s L. L. ⊙'s U. L. westerly
	52 56½	49 22	45 49							
☿ 12	13 47::	19 17 21	20 53		73 0	29,73	+ 5	+12	W.	⊙'s U. L. ⊙'s L. L. easterly
	18 3	21 35	25 5							
♃ 13	1 44	4 58 10	54 41	0 9 23,7	73 0	29,63	+23	+17	W.	⊙'s L. L. ⊙'s U. L. westerly
	5 57	5 2 24	58 55							
♄ 15	I find from a mean of 8 comparisons made in the course of this week, and that which immediately preceded the last, that the assistant clock gains on Mr. Ellicott's at the rate of 3″, 03 in 6 hours: but from a mean of 4 taken the week preceding the last, it gained only 2″ 81; and from the 4 which were made this week, it gains 3″ 25 in six hours. W. W.									
	2½″, 3″, 3″, 2″¼ 3″ 4″ 3′ 3″									
♄ 15	0 29	20 33 23	37 16		62 48	29,91	+ 1	+ 6	D.	⊙'s U. L. ⊙'s L. L. easterly
	34 7	38 3	41 57							
☉ 16	16 20	3 42 25	38 32	0 9 50,—	62 48	29 87	+13	+12	D.	⊙'s L. L. ⊙'s U. L. westerly
		47 5	43 12							

1769		Equal altitudes. Times by the clock.								Zenith distance	Barometer	Thermometers		Phænomena and circumstances.	
		Lower Wire		Middle Wire		Upper Wire		Passed the Meridian							
April		′	″	h	′	″	′	″	h ′ ″	° ′	Inches	A	B	Observer	
♄	22	14	6	20	17	48	21	32		62 40	29,45	+22	+32	W.	☉'s U. L. ☉'s L. L. easterly
		18	33		22	17	26	2							
☉	23	3	48	4	0	1			0 10 46,7	62 40	29,45	36	41	W.	☉'s L. L. ☉'s U. L. westerly
		8	14	4	4	31									
		3	12	19	6	41				71 20					☉'s U. L. easterly
		7	21		10	53	14	22			29,60	26	28	W.	☉'s L. L. flying
					22	16½	25	46		69 20					☉'s U. L. clouds
		22	59		26	29	29	58							☉'s L. L.
☽	24	59	35	4	56	3::	52	34	0 10 50,8	69 20	29,69	35	32	W.	☉'s L. L. westerly a little uncertain be cause of clouds
		3	49	5	0	17	56	47::							☉'s U. L.
		15	14		11	43	8	13		71 20	29,69	34	31	W.	☉'s L. L.
		19	26		15	56	12	29							☉'s U. L.
		1	0	21			9	15							☉'s U. L. easterly
		5	54	21	10	6	14	15		56 40	29,72	22	37	W.	☉'s I. L. thin cloud
♂	25	16	48	3	12	37	8	30	0 11 1,5						
		21	45		17	36	13	30		56 40	29,75	36	43	W.	☉'s L. L. ☉'s U. L. westerly
		25	12	19	28	43	32	13							
		29	26		32	57	36	27		68 0	29,67	27	33	W.	☉'s U. L. ☉'s L. L. easterly
♃	26	53	39	4	50	8			0 11 7,5						
		57	52		54	23	50	50::		68 0	29,59	43	45	W.	☉'s L. L. ☉'s U. L. westerly very hazy
		33	46:	21	38	21	42	54							
		39	17		43	54	48	28		52 40	29,66	36	44	W.	☉'s U. L. ☉'s L. L. easterly
♃	27	43	50	2	39	11	34	36	0 11 14,3						
		49	22		44	47	40	12		52 40	29,83	49	57	W.	☉'s L. L. ☉'s U. L. westerly
		21	10	19	24	41	28	10							
		25	23		28	55	32	25		68 0	29,92	33	35	W.	☉'s U. L. ☉'s L. L. easterly
♀	28	58	5	4	54	32	51	3	0 11 19,0						
		2	17:		58	45	55	15		68 0	29,99	42	48	W.	☉'s L. L. ☉'s U. L. westerly
☿	May 3	5	26	20	9	5	12	42							
		9	43		13	20	16	57		61 0	30,20	32	38	D.	☉'s U. L. ☉'s L. L. easterly
♃	4	15	43				8	26							
		19	59	4	16	21	12	43	0 12 22½	61 0	30,20	45	49	D.	☉'s L. L. ☉'s U. L. westerly
		3	34	20	7	10	10	47							
		7	48		11	26	15	2		61 0	30,16	39	47	D.	☉'s U. L. ☉'s L. L. easterly
♀	5	17	37	4	13	58	10	22	0 12 22,8						
		21	52		18	14	14	39		61 0	30,03	55	62	D.	☉'s L. L. ☉'s U. L. westerly
♃	11	39	32	19	43	6	46	37							
		43	47		47	20	50	51		62 40	29,97	24	22	W.	☉'s U. L. ☉'s L. L. easterly
☿	12	44	55	4	41	22	37	53	0 14 3,05						
		49	10		45	37	42	6		62 40	30,12	27	25	W.	☉'s L. L. ☉'s U. L. westerly
		59	56	5	7	36	15	46							
		17	43		27	5	37	45		53 20	30,13	27	25	W.	
		53	49	7	44	29				52 20	30,14	27	24	W.	☽'s U. L. easterly
		11	29	8	3	55	55	48		52 20	30,15	25	21	W.	
		47	13	8	52	7	57	6		53 20	30,15	24	20	W.	☽'s U. L. westerly
		2	9	9	7	31	12	59		44 40	30,14	23	17	W.	
		54	52	12	49	31	44	1::	10 58 29,3	43 20	30,14	23	16	W.	Arcturus easterly
		9	44	13	4	49	59	50		43 20	30,14	19	14	W.	
										44 40	30,14	19	14	W.	Arcturus westerly

1769	Equal altitudes. Times by the clock.						Zenith distance	Barometer	Thermometers		Phænomena and Circumstances.		
	Lower Wire		Middle Wire		Upper Wire		Passed the Meridian						
May	′ ″		h ′ ″		′ ″		h ′ ″	° ′	Inches	A	B	Observer	
☽ 22	49 48		20 53 36		57 24			52 20	29,66	32	45	W.	⊙'s U. L. East, unc.
	54 21		58 10		1 59								⊙'s L. L. because of
♂ 23	1 19		3 37 29		33 40		0 17 38,3	52 20	29,75	40	46	W.	⊙'s L. L. clouds
	5 50		42 3		38 16							W.	⊙'s U. L. west. flying clouds
	At 20h put the clock back.												
	10 25		20 14 5		17 43			54 20	29,82	27	39	W.	⊙'s U. L. easterly
	14 48		18 29		22 11		23 56 1,0						⊙'s L. L. hazy
☿ 24	37 38		3 33 56		30 15			54 20	29,89	44	48	W.	⊙'s L. L. westerly
	41 59		38 18		34 39								⊙'s U. L. hazy
♃ 25	14 7		20 17 48		21 31		23 56 43,7	53 40	29,81	34	46	W.	⊙'s U. L. east. very
	13 31		22 13										⊙'s L. L. hazy
♀ 26	5 18		3 31 35					53 40	29,70	47	59	W.	⊙'s L. L. west. flying
	9 42		36 0		32 18								⊙'s U. L. clouds
⊙ 28	38 33		19 2 3		5 30½		23 57 50,3	63 0	29,78	31	34	D.	⊙'s U. L.
	2 39		6 11½		9 3½								⊙'s L. L. easterly
	14 1		17 31		20 58			61 0					⊙'s U. L.
	8 8½		21 30		25 6								⊙'s L. L.
☽ 29	37 57		4 34 21½					61 0	29,85	47	49	D.	⊙'s L. L. west. th
	42 3		38 35		35 6								⊙'s U. L. ⊙ almo
	53 23		49 50		46 25			63 0					⊙'s L. L. covered
	57 28		53 59		50 32								⊙'s U. L. with clo.
	57 56		19 1 25		4 52		23 58 12½	63 0	29,88	34	36	D.	⊙'s U. L. at times
	2 3½		5 31½		8 59								⊙'s L. L.
	13 25		16 54½		20 23			61 0	29,88	35	38	D.	⊙'s U. L. easterly
	7 32½		21 3		24 31								⊙'s L. L.
♂ 30	9 16		4 35 44					61 0	29,90	49	49	D.	⊙'s L. L. west. very
	43 21		39 51		36 25								⊙'s U. L. hazy
	54 44		51 13½		47 49			63 0	29,89	49	49	D.	⊙'s L. L.
	58 51		55 21½		51 54½								⊙'s U. L. westerly
♀ June 2	56 5		18 59 34½				23 59 47½	63 0	29,95	35	41	D.	⊙'s U. L.
	0 11		19 3 39½		7 16								⊙'s L. L.
	11 32		15 2		18 31			61 0	29,95	36	42	D.	⊙'s U. L.
	15 40		19 10½		22 37½								⊙'s L. L.
	27 4		30 34½		34 4			59 0	29,95	36	43	D.	⊙'s U. L. easterly
	31 12½		34 43½		38 12½								⊙'s L. L.
	42 40		46 13		49 44			57 0	29,95	37	45	D.	⊙'s U. L.
	46 51½		50 25½		53 56								⊙'s L. L.
♄	2 58		4 9 25					57 0	29,89	52	58	D.	⊙'s L. L.
			13 38		10 8								⊙'s U. L.
	28 41½		25 10½		21 38			59 0	29,89	53	59	D.	⊙'s L. L.
	32 47		29 17½		25 47½								⊙'s U. L.
	14 11		40 41½		37 14			61 0	29,89	53	59	D.	⊙'s L. L. westerly
	18 20		44 50		41 22								⊙'s U. L.
	59 39½		56 11½		52 38½			63 0	29,89	53	60	D.	⊙'s L. L.
	3 49		5 0 18										⊙'s U. L.
			18 59 10		2 36			63 0	29,65	38	42	W.	⊙'s U. L. easterly
	59 51		9 3 20		5 46								⊙'s L. L.

1769 June	Equal altitudes. Times by the clock. Lower Wire ′ ″	Middle Wire h ′ ″	Upper Wire ′ ″	Passed the Meridian h ′ ″	Zenith distance ° ′	Barometer Inches	Thermometers A	B	Observer	Phænomena and Circumstances.
♄ 3	11 9	14 36	18 2		61 0	29,65	38	42	W.	⊙'s U. L. ⊙'s L. L. easterly
	15 18	18 45	22 12							
	26 37	19 30 7	33 35		59 0	29,65	39	45	W.	⊙'s U. L. ⊙'s L. L. very hazy
	30 47		37 48							
	42 14	45 47	49 18		57 0	29,64	40	46	W.	⊙'s U. L. ⊙'s L. L.
	46 29	50 2	53 32							
⊙ 4		4 10 34::	7 1:	0 0 9,3	57 0	29,55	52	54	W.	⊙'s L. L. ⊙'s U. L. westerly very uncertain because of clou.
			11 18::							
	4 26 14		22 45		59 0	29,55	52	53	W.	⊙'s L. L. ⊙'s U. L.
	33 56::	30 28								
	45 17	41 49			61 0	29,55	51	52	W.	⊙'s L. L. ⊙'s U. L.
	49 27:	45 56::	42 33							
	18 36	19 22 6			60 0	29,47	37	43	W.	⊙'s U. L. ⊙'s L. L. easterly
	22 46:		29 47							
	34 8	37 36	41 7		58 0	29,47	38	43	W.	⊙'s U. L. ⊙'s L. L.
	38 18	41 49	45 26							
	49 49	53 22	56 51		56 0	29,47	38	44	W.	⊙'s U. L. ⊙'s L. L.
	54 5	59 38	1 9							
☽ 5	7 21	4		0 0 34,8	56 0	29,46	49	53	W.	⊙'s L. L. ⊙'s U. L. westerly very cloudy and uncertain
		4 8 2								
	23 5		16 2::		58 0	29,46	50	52	W.	⊙'s L. L. ⊙'s U. L.
	27 18	23 45::	20 17							
	38 39	35 8	31 40		60 0	29,46	50	52	W.	⊙'s L. L. ⊙'s U. L.
	42 51	39 19								
♄ 10	10 15½	19 13 44			61 0	29,49	37	41	D.	⊙'s U. L. ⊙'s L. L. ⊙'s U. L. ⊙'s L. L. easterly
	14 23	17 51	21 17½							
	41 16	44 45½	48 17		57 0					
	45 26	48 59	52 30½							
⊙ 11	21 11	4 17 38	14 8½	0 3 14,3	57 0	29,66	55	54	D.	⊙'s L. L. ⊙'s U. L. westerly
	25 22½	21 49½	18 19							
	52 16	48 47	45 20		61 0	29,67	55	55	D.	⊙'s L. L. ⊙'s U. L.
	56 25½	52 54½								
☽ 19	25 14	19 28 44	32 12		59 20	29,75	44	48	W.	⊙'s U. L. ⊙'s L. L. ⊙'s U. L. ⊙'s L. L. easterly
	29 24	32 55	36 23							
	40 47	44 18	47 47½		57 20					
	44 59	48 30	50 0½							
♂ 20	29 56	4 26 25	22 54	0 7 26¼	57 20	29,72	63	63	W.	⊙'s L. L. ⊙'s U. L. ⊙'s L. L. ⊙'s U. L. westerly
	34 7	30 36	27 7							
	45 27	41 57	38 28		59 20					
	49 37	46 7	42 38							
♃ 21	26 8½	19 29 38	33 6		59 20	29,74	40	41	W.	⊙'s U. L. ⊙'s L. L. ⊙'s U. L. ⊙'s L. L. easterly
	30 20	33 50	37 19							
	41 43½	45 14	48 43		57 20					
	45 55	49 26	52 55½							
♃ 22	30 45	4 27 14	23 43	0 8 19¾	57 20	29,80	60	60	W.	⊙'s L. L. ⊙'s U. L. ⊙'s L. L. ⊙'s U. L. westerly
	34 56	31 26	27 55							
	46 18	42 48	39 18		59 20					
	50 27	46 58	43 30							

1769 June	Equal altitudes. Times by the clock. Lower Wire	Middle Wire	Upper Wire	Paſſed the Meridian	Zenith diſtance	Baro-meters	Thermo-meters A	Thermo-meters B	Obſerver	Phænomena and Circumſtances.
	′ ″	h ′ ″	′ ″	h ′ ″	° ′ ″	Inches				
♃ 22	11 18	19 14 47			61 20	29,68	46	49	W.	☉'s U. L. ☉'s L. L. easterly
	15 27½	18 57	22 24½							
♀ 23	2 6	4 58 38	55 11	0 8 48,2	61 20	29,58	61	62	W.	☉'s L. L. ☽'s U. L. westerly
	6 15	5 2 46	59 19							
	55 51	19 59 23			55 40	29,51	48	48	W.	☉'s U. L. ☉'s L. L. easterly
	0 5	20	7 9:							
♄ 24	18 18	4 14 45	11 13	0 9 12,8	55 40	29,60	57	56	W.	☉'s L. L. ☉'s U. L. westerly
	22 32	18 59	15 27							
♂ 27	3 49½	20 7 20::	10 56:		55 0	29,69	50	59	D.	☉'s U. L. ☉'s L. L. easterly
	8 1	11 34	15 9							
☿ 28	13 49	4 10 14	6 41½	0 10 58,6	55 0	29,80	66	65	D.	☉'s L. L. ☉'s U. L. westerly
	18 0½	14 29	10 56:							
☉ July 2	23 59	19 27 28½	30 56		60 40	29,57	52	56	W.	☉'s U. L. ☉'s L. L. easterly
	28 8	31 38	35 5							
☽ 3	57 55	4 54 26	50 58	0 13 8,0	60 40	29,49	70	79	W.	☉'s L. L. ☉'s U. L. westerly
	2 4	58 34								
♃ 6	28 8½	19 31 39	35 8		60 40	30,08	46	50	W.	☉'s U. L. ☉'s L. L. ☉'s U. L. ☉'s L. L. easterly
	32 18	35 48½	39 17							
	43 40	47 10½	50 39½		58 40					
	47 50½	51 21	54 50:							
♀ 7	41 29	4 37 58	34 28	0 14 48,1	58 40	30,16	56	54	W.	☉'s L. L. ☉'s U. L. ☉'s L. L. ☉'s U. L. westerly
	45 39	42 9	38 39		60 40					
	57 3		50 5							
	1 13:	57 44	54 14							
♃ 13	49 44	19 53 16	56 46		59 0	29,73	48	48	D.	☉'s U. L. ☉'s L. L. easterly
	53 54	57 26	0 57							
♀ 14	40 38	4 37 8	33 37	0 17 27,5	59 0	29,68	55	57	D.	☉'s L. L. ☽'s U. L. westerly
		41 17	37 47							
	56 20½	19 59 53	3 24		58 20	29,60	49	48	D.	☉'s U. L. ☉'s L. L. easterly
	0 31	20 4 4	7 35							
♄ 15	34 40	4 31 8	27 36½	0 17 46,9	58 20	29,65	55	50	D.	☉'s L. L. ☉'s U. L. westerly
	38 51	35 19½	31 49							
♃ 27	55 57½	19 59 29	3 0		61 0	29,61	51	54	D.	☉'s U. L. ☉'s L. L. easterly
	0 7	20 3 40½	7 12							
♀ 28	41 56	4 38 24	34 53	0 21 18,9	61 0	29,67	67	70	D.	☉'s L. L. ☉'s U. L. westerly
	46 6½	42 35	39 4						W.	
♂ Aug. 1	Put the clock back.									
♃ 3	52 4	19 55 40	59 15		61 0	29,65	45	50	W.	☉'s U. L. ☉'s L. L. easterly
	56 21½	59 58	3 34							
♀ 4	14 11	4 10 34½	6 59	0 5 35,4	61 0	29,64	60	56½	W.	☉'s L. L. ☉'s U. L. westerly
	18 29	14 53	11 18							
☽ 7	12 42½	19 16 13	19 42½		67 0	29,50	49	51	D.	☉'s U. L. ☉'s L. L. easterly
	16 51½	20 22½								
♂ 8	54 34	4 51 2½		0 6 5¾	67 0	29,44	56	61	D.	☉'s L. L. ☉'s U. L. westerly
	58 44	55 14	51 44							
♂ 15	34 37½	19 38 12	41 44½		66 20	29,98	46	49	W.	☉'s U. L. ☉'s L. L. easterly
	38 55	42 29								

1769	Equal altitudes. Times by the clock.						Zenith distance	Barometer	Thermometers		Phænomena and Circumstances.		
Auguſt.	Lower Wire		Middle Wire		Upper Wire	Paſſed the Meridian		Inches	A	B	Obſerver		
	′ ″		h ′ ″		′ ″	h ′ ″	° ′						
☿ 16	33 37		4 30 2		26 29½	0 6 39,9	66 20	30,01	54	57	W.	☉'s L. L. ☉'s U. L.	westerly
	37 54		34 20		30 47								
♃ 24	6 13½	20	9 57½		13 43		65 0	29,54	46	50	D.	☉'s U. L. ☉'s L. L.	easterly
	10 39		14 25		16 11								
♀ 25	1 39					0 6 34½	65 0	29,64	58	57	D.	☉'s L. L. ☉'s U. L.	westerly
	6 7½		4 2 21½										

1768	Apparent Times.	Zenith distances.						Barometer.	Thermometers.		Phænomena and Circumstances.		
September		90 Arch	96 Arch		Subt.	96 Arch reduced		Inches	A	B	Obſerver		
	h ′ ″	° ′ ″	G.	S.	V.	″							
♃ 15		55 52 33	59	2	12	20	55 51 49	29,61	46	42½	W.	☉'s U. L. on merid.	
♂ 20		58 20 58	62	0	30	9	58 20 32	30,06	47	41	D.	☉'s L. L. ditto.	
☿ 21		58 12 30	62	0	11	6	58 12 15	30,09	45½	49	D.	☉'s U. L. ditto.	
♃ 22		59 7 44	63	0	9	16	59 7 26	29,93	57	60	D.	☉'s L. L. ditto.	
♂ 27		60 32 24	64	2	10	21	60 32 10	29,77	47	48	W.	☉'s U. L. ditto.	
♃ 29		50 30 36	53	3	15	6	50 29 56	29,99	52	49	W.	α aquilæ on the merid.	
		9 46 57	10	1	24	2	9 47 2	29,97	43	38½	W.	α perſei do. pl. qua. E.	
	15 40 56	35 19 36	37	2	22	10	35 18 53	29,78	42½	38	W.	☽'s U. L. on merid.	
♀ 30		61 42 40	65	3	10	25	61 42 25	29,98	47	47½	W.	☉'s U. L. ☉'s L. L.	on meri.
		62 15 0	66	1	19	13	62 14 42						
♄ Oct. 1		62 38 15	66	3	9	15	62 38 23	29,79	46	45½	W.	☉'s L. L. on merid.	
☉ 2		14 19 21	15	1	3	16	14 18 52	29,19	46	39	D.	α cygni ditto.	
♄ 13		50 30 34	53	3	15	4	50 29 58	29,82	32	28½	W.	α aquilæ ditto. (v. g.)	
		14 19 25	15	1	3	0	14 19 8	29,82	32	28½	W.	α cygni ditto. (v. g.)	
		13 2 44	13	3	22	12::	13 2 54	29,84	28	27	W.	capella do. pl. qu. W.	
♀ 14		67 2 54	71	2	2	2	67 2 43	29,90	37	34	W.	☉'s U. L. ☉'s L. L.	on the merid.
		67 35 25	72	0	12	10	67 35 6						
		50 30 49	53	3	16	8	50 30 20	29,90	38	32	W.	α aquilæ ditto.	
		9 45 52	10	1	21	0	9 45 47	29,86	31	28	W.	α perſei do. pl. qu. W.	
		13 3 12	13	3	23	25	13 3 8	29,83	31	27	W.	capell. do. do. ver. hazy	
☉ 16		68 19 22	72	3	16	17	68 18 56	30,20	25	18½	D.	☉'s L. L. on merid.	
		20 12 18	21	2	7	6	20 12 21	30,18	27	21	D.	α lyræ ditto.	
		50 30 52	53	3	16	6	50 30 22	30,18	27	21	D.	α aquilæ ditto.	
		14 19 30	15	1	4	11	14 19 23	30,17	26	20½	D.	α cygni ditto.	
☽ 17		68 9 20	72	2	25	16	68 8 51	30,22	29	23½	D.	☉'s U. L. ditto.	
		20 12 20	21	2	7	2	20 12 25	30,18	29	26½	D.	α lyræ ditto.	
		14 19 36	15	1	4	6	14 19 28	30,14	28	25½	D.	α cygni ditto.	
		9 46 48	10	1	23	16	9 46 24	30,05	25	21	D.	α perſei do. pl. qu. E.	
		13 3 34	13	3	23	20	13 3 13	30,01	27	24	D.	capella ditto. ditto.	
♀ 28		50 30 24	53	3	15	14	50 29 48	29,87	19	11½	W.	α aquila on meridian	
		14 18 51	15	1	3	18	14 18 50	29,87	17½	10½	W.	α cygni ditto.	
♄ 29		9 45 54	10	1	21	6	9 45 41	30,07	14	9½	W.	α per. do. pl. qu. E. haz.	

1768	Apparent Times	Zenith distances.					Barometer.	Thermometers.		Phænomena and Circumstances.
		90 Arch	96 Arch	ub.	96 Arch reducced			A	B	Observer
November	h ′ ″	° ′ ″	G. S. V.	″	° ′ ″		Inches			
☉ 6		50 29 11	53 3 12	6	50 28 37		29,65	+ 6	—3	W. α aquilæ on meridian
		14 18 40	15 1 2	3	14 18 38		29,65	+ 5	—3½	W. α cygni ditto.
☿ 9		50 29 38	53 3 14	12	50 29 23		29,89	0	—3½	W. α aquilæ ditto.
☿ 16		14 18 48	15 1 2	0	14 18 41		29,58	+ 4	—5	D. α cygni ditto.
	*** Many of the preceding observations can be of no use in determining the latitude of the place; but I thought it might be useful to insert them, as they serve to shew what a very great alteration happened in the position of the line of collimation of the quadrant, about this time. W. W.									
☿ 16		9 45 40	10 1 20	15	9 45 6		29,62	+ 7	— 2	D. α pers. on m. pla. qu. E.
		13 2 53	13 3 21	20	13 2 20		29,63	+ 5	— 2	D. capella ditto ditto.
♀ 18	5 32 43	65 0 0								
	37 30	64 40 0								
	42 31	64 20					29,87	—6½	—12½	D. ☽'s L. L. east merid.
	47 50	64 0 0								
	53 11	63 40 0								
	7 28 28	60 11 16	64 2 7	14			29,87	— 8	—13	D. ☽'s L. L. on merid.
	36 28	60 30 20								
	41 28	60 30 50								
	49 8	60 33 16					29,88	— 8	—14	D. ☽'s L. L. west merid.
	54 28	60 36 48								
		9 46 32	10 1 23	20	9 46 20		29,88	— 2	—13½	D. α persei } on mer. pl.
		13 3 32	13 3 23	24	13 3 9		29,89	— 1	—14	D. capella } of qu. W.
		51 25 44	54 3 13	0	51 25 24		29,90	0	—14	D. α orionis on merid.
♄ 19		9 46 0	10 1 21	0	9 45 47		29,85	—10	—15	D. α persei do. pl. qu. E.
☽ 28		9 45 48	10 1 20	4	9 45 17		29,35	— 8	—18	D. α persei } on merid. pl.
		13 2 26	13 3 20	4	13 2 10		29,37	—10	—18½	D. capella } of quad. E.
♂ 29		9 47 30	10 1 24	3	9 47 3		29,51	— 5	— 9	D. α persei } on merid. pl.
		13 3 28	13 3 23	3	13 3 30		29,63	— 4	—12	D. capella } of quad. W.
♀ Dec. 2		58 11 18	62 0 9	24	58 11 3		29,55	— 5	—16	D. α urs. maj. on m. bel. p.
		29 16 20	31 0 28	12	29 15 51		29,53	— 6	—16	D. polaris do. above pole
		65 2 10	69 1 15	16	65 1 38		29,52	— 6	—16	D. ζ urs. maj. do. bel. pole
♄ 3		58 11 30	62 0 9	13	58 11 14		29,56	— 1	— 8	D. α urs. maj. do. do.
		29 16 17	31 0 28	12	29 15 51		29,56	— 2	—10	D. polaris do. above pole
		65 2 7	69 1 15	24	65 1 30		29,56	—2½	—10½	D. ζ urs. maj. do. bel. pole
		9 46 14	10 1 21	16	9 45 32		29,53	— 3	—12	D. α persei do. pl. qu. E.
☽ 6		58 11 32	62 0 9	19	58 11 8		29,54	—11½	—23	W. α urs. maj. do. bel. pole
		9 47 30	10 1 24	0	9 47 7		29,95	— 9	—21	W. α persei do. pl. qu. W.
☿ 7		66 11 48	70 2 13	0	66 11 20		30,10	—10	—21½	W. γ urs. maj. do. bel. pol.
♃ 8		66 11 40	70 2 13	0	66 11 20		30,21	— 3	—15½	W. do. do. do.
		65 2 41	69 1 16	4	65 2 17		30,21	— 3	—16	W. ζ urs. maj. do. do.
♄ 10		9 46 0	10 1 21	12	9 45 35		29,54	—10	—25	W. α persei do. pl. qu. E.
♃ 15		58 11 20	62 0 8	0	58 11 1		29,92	—24	—25	D. α urs. maj. do. bel. pol.
		29 15 56	31 0 28	16	29 15 47		29,94	—23½	—25	D. polaris do. above pole
		65 1 57	69 0 14	8			29,95	—23½	—25½	D. ζ urs. maj. do. bel. pole
☽ 19		66 11 39	70 2 13	4	66 11 12		29,89	—15	—21	W. γ urs. maj. do. do.
		29 16 16	31 0 28	14	29 15 49		29,89	—15	—21	W. polaris do. above pole

1769		Apparent Times	Zenith distances. 90 Arch			96 Arch			Su.	96 Arch reduced			Barometer Inches	Thermometers A	B	Observer	Phænomena and Circumstances.
January			°	′	″	G.	S.	V.	″	°	′	″					
☉	1		70	41	4	75	1	19	11	70	40	59	29,94	—25	—29	W.	η urſ. maj. on mer. bel. the pole
			33	6	28	35	1	8	0	33	6	20	30,16	—25	—27	W.	polaris, ditto, ditto
☽	2		70	41	9	75	1	19	20	70	40	50	30,19	—28	—34	W.	η urſ. maj. ditto, ditto
♂	17		42	45	20	45	2	13	0	42	45	5	29,46	—34	—39	W.	aldebaran on the meridian
♅	18		29	16	16	31	0	28	12	29	15	49	29,45	—34	—38	W.	polaris on merid. above the pole
			65	2	20	69	1	15	20	65	1	34	29,45	—34	—39	W.	ζ urſ. maj. ditto below the pole
			70	41	30	75	1	19	14	70	40	56	29,44	—34	—39	W.	η urſ. maj. ditto, ditto
			42	45	20	45	2	14	20	42	45	12	29,36	—34	—36	W.	aldebaran on the meridian
♀	20		65	2	27	69	1	15	14	65	1	40	29,45	—27	—30	W.	ζ urſ. maj. on merid. bel. the pole
			2	39	44	2	3	12	12	2	39	46	29,55	—33	—36	W.	ditto, ditto above the pole
			8	20	20	8	3	19	16	8	20	16	29,55	—33	—36	W.	η ditto, ditto, ditto
♄	21		70	41	28	75	1	19	15	70	40	55	29,74	—31	—36	W.	ditto, ditto below the pole
♄	28		75	24	10	80	1	22	2	75	23	42	30,13	—37	—40	W.	capella, ditto, ditto
☉	29		70	41	38	75	1	19	8	70	41	2	30,08	—30	—34	W.	η urſ. maj. ditto, ditto
			9	46	7	10	1	21	3	9	45	44	30,07	—30	—35	W.	α perſei, ditto above the pole
			13	3	7	13	3	22	0	13	3	6	30,05	—31	—36	W.	capella, ditto, ditto
			2	39	52	2	3	12	14	2	39	44	30,00	—35	—40	W.	ζ urſ. maj. ditto, ditto
			8	19	4	8	3	16	10	8	19	3	30,00	—35	—40	W.	η urſ. maj. ditto, ditto
			72	7	52	76	3	24	24	72	7	30	29,99	—36	—41	W.	α perſei, ditto below the pole
			75	23	56	80	1	22	16	75	23	28	29,98	—36	—41	W.	capella, ditto
☽	30		70	41	28	75	1	19	15	70	40	55	29,97	—28	—31	W.	η urſ. maj. ditto, ditto (hazy)
			13	3	8	13	3	22	10	13	2	56	29,96	—29	—30	W.	capella, ditto above the pole
♂	31		9	46	16	10	1	22	20	9	45	54	30,17	—24	—31	W.	α perſei, ditto, ditto
			13	3	10	13	3	22	12	13	2	54	30,16	—26	—31	W.	capella, ditto, ditto
☉	Feb. 5		13	3	16	13	3	23	20	13	3	13	29,79	—16	—20	D.	capella, ditto, ditto
			51	26	36	54	3	16	24	51	26	19	29,79	—16	—20	D.	α orionis on the meridian
♅	8		42	45	30	45	2	13	12	42	44	53	30,03	—13	—12	D.	aldebaran, ditto
			13	3	30	13	3	23	10	13	3	23	30,03	—13	—13	D.	capella, ditto above the pole
			51	26	32	54	3	16	24	51	26	19	30,02	—13	—13	D.	α orionis on the meridian
			33	7	16	35	1	10	20	33	6	52	29,83	—13	— 9	D.	polaris, ditto below
♃	9		42	45	38	45	2	13	10	42	44	55	29,60	+ 7	+12	D.	aldebaran on the meridian
			13	3	28	13	3	23	24	13	3	19	29,59	+ 9	+12	D.	capella, ditto above the pole
☿	10		33	7	36	35	1	10	10	33	7	2	30,32	—16	—21	D.	polaris below
			75	24	17	80	1	23	20	75	23	50	30,33	—21	—26	D.	capella below the pole
☽	13		75	24	22	80	1	23	18	75	23	52	29,93	—26	—27	W.	ditto, ditto
♂	14		9	46	26	10	1	22	10	9	46	4	29,98	—17	—21	W.	α perſei on merid. above the pole
			13	3	28	13	3	22	6	13	3	0	29,96	—18	—21	W.	capella, ditto, ditto
♅	22		42	45	52	45	2	14	0	42	45	32	29,74	—19	—29	D.	aldebaran on the meridian
			51	26	20	54	3	15	22	51	25	55	29,72	—21	—30	D.	α orionis, ditto
☿	24		13	3	28	13	3	23	24	13	3	19	29,83	—20	—26	D.	capella, ditto
			51	26	24	54	3	15	20	51	25	57	29,84	—20	—28	D.	α orionis, ditto
			33	7	17	35	1	10	16	33	6	56	29,93	—29	—37	D.	polaris, ditto below the pole
♄	25		51	26	4	54	3	14	14	51	25	36	29,90	—25	—31	D.	α orionis on the meridian
♃	Mar. 2		42	45	24	45	2	13	3	42	45	2	30,02	—28	—31	W.	aldebaran on the meridian
☿	3		42	45	22	45	2	13	0	42	45	5	29,86	—18	—15	W.	ditto, ditto (v. g.)
☽	6		33	7	20	35	1	10	22	33	6	50	29,70	—31	—36	D.	polaris on the meridian below
			75	24	34	80	1	24	22	75	24	14	29,69	—36	—41	D.	capella, ditto, ditto

1769		Appar. Time	Zenith distances. 90 Arch	96 Arch	Subt.	96 Arch reduced	Barometer	Thermometers A	B	Observer	Phænomena and Circumstances.
May		h ′ ″	° ′ ″	G. S. V.	″	° ′ ″	Inches				
♀	12	5 57 22	50 57 0								
		6 0 31	54 0				30,14	+27	+24	W.	☽'s U. L. east of the merid.
		4 10	51 0								
		6 59	49 0								
		21 53	50 44 32	54 0 15	4	50 44 1½	30,14	+26	24	W.	☽'s U. L. on the merid.
		36 51	49 0								
		39 15	51 0								
		42 58	54 0				30,14	24	22	W.	☽'s U. L. west of the merid.
		46 12	57 0								
		51 54	51 3 0								
			38 25 32	40 3 29	0	38 24 56	30,14	+21	+15	W.	arcturus on the meridian
☽	22		37 59 44	40 2 3	9	37 59 18	29,74	+41	+42	W.	☉'s U. L. ditto
☿	24		38 9 29	40 2 26	20	38 9 13	29,87	+36	+43	W.	☉'s L. L. ditto (hazy)
☽	une 6		38 25 24	40 3 29	6	38 24 50	29,44	48	44	W.	arcturus on the meridian
☉	11		64 29 0	68 3 4	18	64 28 39	29,68	54	58	D.	☽'s U. L. ditto
			61 51 50	65 3 29	0	61 51 11					
			62 53 17	67 0 10	16	62 52 53	29,68	48	44	D.	♂ ε ophiuchi on meridian
☽	12	6 9 0	70 20 0				29,78	44	40	D.	
		14 14	10 0							D.	
		19 51	0 0							D.	☽'s U. L. east of the merid.
		26 3	69 50 0							D.	
		33 15	69 40 0				29,78	42	40	D.	
		11 10	69 17 5	73 3 19	13	69 16 34	29,79	42	41	D.	☽'s U. L. on the meridian
		46 51	69 40 0							D.	
		54 16	69 50 0				29,79	42	41	D.	☽'s U. L. west of the merid.
		3 0 44	70 0 0							D.	
♂	20		35 3 31	37 1 19	22	35 3 18	29,76	57	64	W.	☉'s U. L. / ☉'s L. L. on the merid.
♃	22		35 35 6	37 3 26	12	35 34 40					
			35 36 12	37 3 28	6	35 35 39	29,79	54	56	W.	☉'s L. L. / ☉'s. U. L. on the merid.
			35 4 20	37 1 20	16	35 3 50					
♄	24		6 19 22	6 2 31	20	6 18 53	29,57	52	49	W.	β draconis on the meridian,
			7 16 20	7 3 1	18	7 16 5	29,57	51	48	W.	γ plane of the quadrant east
☉	July 2		7 15 36	7 3 0	13	7 15 43	29,68	56	52	W.	γ drac. do. pl. of quadr. west
♀	7		6 18 56	6 2 30	11 : :	6 18 38	30,14	50	44	W.	β draconis ditto, plane of the
			7 16 22	7 3 1	4	7 16 19	30,13	49	43	W.	γ quadrant east (foggy)
♂	18		7 15 43	7 3 0	14	7 15 42	29,44	57	53	W.	γ drac. do. pl. of quadr. west
♃	20		6 18 46	6 2 30	18	6 18 31	29,64	54	50	W.	β draconis, plane of the
			7 15 36	7 3 0	18	7 15 38	29,64	53	48	W.	γ quadrant west
♀	21		6 19 27	6 3 0	25	6 19 16	29,66	56	52	W.	β draconis on the meridian,
			7 16 18	7 3 1	10	7 16 13	29,66	56	51	W.	γ plane of the quad. east
♄	22		6 18 30	6 2 29	2	6 18 24	29,63	54	50	W.	β draconis on the meridian,
			7 15 40	7 3 0	12	7 15 44	29,63	54	49	W.	γ plane of the quad. west
♄	25		7 16 23	7 3 1	8	7 16 15	29,69	62	58	D.	γ drac. do. pl. of quadr. east
☉	30		7 15 30	7 3 0	20	7 15 36	29,67			W.	γ drac. on mer. pl. of quad. west
☿	Aug. 2		40 55 30	43 2 19	8	40 55 5½	29,73	57	59	W.	☉'s U. L. / ☉'s L. L. on merid. clouds
			41 27 28 :	44 0 28	10	41 27 8					
♀	4		7 16 20	7 3 1	16	7 16 7	29,62	55	47	W.	γ drac. do. pl. of quadr. east

1769	Apparent Times	Zenith distances.				Barometer	Thermometers		Phænomena and Circumstances.
		90 Arch	96 Arch	Su.	96 Arch reduced				
August	h ′ ″	° ′ ″	G. S. V.	″	° ′ ″	Inches	A	B	Observer
♄ 5		42 15 36	45 0 9	0	42 15 12	29,67	55	54	W. ⊙'s L. L. on the merid.
		41 43 46	44 2 2	23	41 43 37				W. ⊙'s U. L. on the merid.
	2 37 1	65 14 21	69 2 11	21	65 13 52				
	42 6	65 11 53	69 2 6	25	11 36				
	46 29	65 10 50	2 3	18	10 24				
	54 17	65 10 0	2 1	10	9 39	29,70	59	57	W. ☽'s U. L.
	58 59	65 10 34	2 2	18	9 57				
	3 4 46	65 12 20	2 6	6	11 55				
	9 17	65 14 22	2 10	0	65 13 46				
		65 21 4	69 2 25	0	65 20 22	29,79	51	47	W. β aquarii on the meridian
		60 12 36	64 0 28	18	60 12 0	29,80	51	47	W. α aquarii on the meridian
♄ 12		44 14 50	47 0 25	15	44 14 29	29,63	56	61	D. ⊙'s L. L. on the merid.
☉ 20	14 20 28	48 40 0							
	23 14	48 35 0							
	28 43	48 31 0				29,81	44	44	D. ☽'s L. L. east of merid.
	20 33 ::	48 27 0							
	31 48 ::	48 23 0							
		48 5 42	5☽ 1 6	18	48 5 9	29,81	45	44	D. Ditto on the meridian
	15 29 23	48 23 0							
	32 26	48 27 0							
	35 19	48 31 0				29,81	45	43	D. Ditto west of the merid.
	37 53	48 35 0							
	40 58	48 40 0							
♂ 22		47 30 19	50 2 20	0	47 29 25	29,48	54	59	⊙'s L. L. on the merid.

1768	Time per clock	Apparent Time	Occultations of Fixed Stars by the Moon, &c. Observed.
September	h ′ ″	h ′ ″	
♅ 21	7 2 9	7 6 52	ρ ♍ immerged behind the ☽'s dark limb J. D.
	7 2 16	7 6 59	ρ ♍ immerged behind the ☽'s dark limb W. W.
1769			
♅ Mar. 15	11 21 6	11 24 34	ζ ♊ immerged behind the ☽'s dark limb (very exact) W. W.
	12 8 44	12 12 FB	Ditto emerged (perhaps about 5″ sooner) J. D.
♅ 29	16 54 0	16 46 22 ::	2d ♑ ♐ immerged behind the bright limb of the moon W. W.
	53 58	16 46 19	2d ♑ ♐ immerged behind the bright limb of the moon J. D.
☉ Apr. 9	10 29 21	10 20 27½	τ ♉ immerged behind the Moon's dark limb J. D.
☽ 10	15 38 44	15 29 39	♃'s 1st satellite immerged close to the body of the planet W. W.
	39 14	15 30 9	♃'s 1st satellite immerged close to the body of the planet J. D.
☉ Aug. 11	9 16 47	9 10 22½	The * N° 43 of Ophiuchi in Mr. Flamstead's catalogue immerged behind the dark limb of the ☽ (very faint) J. D.
	10 14 56	10 8 3F	B in the same constellation and catalogue immerged J. D.
	10 14 54	10 8 29	Ditto per W. W. N. B. The immersion happened towards the northern limb of the ☽ so very near the intersection of light and darkness, as to render the observation doubtful to 2 or 3″.

The

The following Table for the MICROMETER I received from the late Mr. Short, along with the Inſtrument.

Wm. Wales.

Inches	′ ″	Decim. of an in.	′ ″	Vern.	″	Vern.	″
1	6 50,2	0,05	0 20,5	1	0,8	20	16,4
2	13 40,4	10	0 41,0	2	1,6	21	17,2
3	20 30,6	15	1 1,5	3	2,5	22	18,1
4	27 20,9	20	1 22,0	4	3,3	23	18,9
5	34 11,1	25	1 42,6	5	4,1	24	19 7
		30	2 3,1	6	4,9		
		35	2 23,6	7	5,7		
		40	2 44,1	8	6,6		
		45	3 4,6	9	7,4		
		50	3 25,1	10	8,2		
		55	3 45,6	11	9,0		
		60	4 6,1	12	9,8		
		65	4 26,6	13	10,7		
		70	4 47,2	14	11,5		
		75	5 7,7	15	12,3		
		80	5 28,2	16	13,1		
		85	5 48,7	17	13,9		
		90	6 9,2	18	14,8		
		95	6 29,7	19	15,6		

1769	Times per clock	Apparent Times	Parts of the micrometer		Micrometer reduced	Obſervations on the Tranſit of Venus.	
June	h ′ ″	h ′ ″	Inches	Vernier	′ ″		
♄ 3	0 56 49	0 57 0,6				Exterior contact at the ingreſs	J. D.
	56 56	0 57 7,6				Ditto	W. W.
	1 15 10	1 15 21,3				Interior ditto	W. W.
	15 14	1 15 25,3				Ditto	J. D.
	57 21	57 31½	0,40	18	2 57,5	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	58 36	58 46½	0,10	22	0 57,5	♀'s diameter off the ſcale	
	2 1 16	2 1 26½	4,60	4½	31 32,3	⊙'s diameter	
	2					Cloudy a ſhort time	
	4 11	4 21½	4,25	10	29 13,3	Diſt. of Venus's fartheſt limb from the ⊙'s fartheſt	J. D.
	5 58	6 8½	0,10	19	0 58,2	♀'s diameter on the ſcale	
	7 33	7 43½	0,50	0½	3 27,1	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	9 9	9 19½	0,10	19	0 58,2	♀'s diameter on the ſcale	
	10 26	10 36¼	0,15	0	0 59,9	Ditto off the ſcale	
	12 0					Cloudy	

1769	Times per clock	Apparent times	Parts of the micrometer		Micrometer reduced	Obſervations on the Tranſit of Venus.	
June	h ′ ″	h ′ ″	Inches	Vernier	′ ″		
♄ 3	2 39 0	2 39 10	4,60	1½	31 29,8	⊙'s horizontal diameter	
			4,60	1	31 29,4		
	44 43	44 52¾	0,70	7½	4 54,9	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	51 40	51 49¾	0,10	20½	0 59,4	♀'s diameter on the ſcale of the micrometer	
	53 26	53 35½	0,15	2	1 1,5	Ditto off	
	3 4 58	3 5 7½	0,80	4	5 33,1	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	6 13	6 22½	0,10	21	0 59,8	♀'s diameter on the ſcale	W. W.
						Cloudy	
	17 47	17 56¼	4,60	4	31 31,9	⊙'s inclined diameter	
	19 40	19 49¼	0,85	6:	5 55,2	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	22 20	22 29¼	0,85	14:	6 1,8	Ditto	
	23 38	23 47	0,10	21	0 59,8	♀'s diameter on the ſcale	
	24 35	24 44	0,10	23½	0 58,7	Ditto off	
	42 47	42 55¾	0,10	24	0 59,1	Ditto ditto	
						N. B. Several of the above obſervations are a little uncertain, being taken in great haſte, in the intervals between flying clouds. W. W.	
	46 40	46 48¾	0,90	10½	6 19,4	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	48 0					A ſmall cloud	
	48 49	48 57¾	0,90	11	6 19,8	Diſt. of ♀'s fartheſt limb from the Sun's neareſt	J. D.
	51 33	51 41¼	0,90	12	6 20,6	Ditto	
	55 24	55 32½	0,90	12	6 20,6	Ditto	
	56 19	56 27½	0,90	12½	6 21,1	Ditto	
	59 2	59 10½	0,90	12:	6 20,6	Ditto	
	4 0 50	4 0 58½	0,90	11½	6 20,2	Ditto	
	2 51	2 59½	0,90	11½	6 20,2	Ditto	
	5 23	5 31½	0,90	12½	6 21,1	Ditto	
	7 12	7 20½	0,90	12½	6 21,1	Ditto	
	11 5	11 13¼	0,90	12	6 20,7	Ditto	
	14 37	14 45¼	0,90	12	6 20,7	Ditto	
	17 50	17 58¼	0,90	11	6 19,8	Ditto	
	19 50	19 58¼	0,10	22	1 0,7	♀'s diameter on the ſcale	
	21 30	21 38¼	0,10	24	0 59,1	Ditto off	W. W.
	23 27	23 35	4,60	0½	31 29,0		
	25 42	25 50	4,60	1½	31 29,8	⊙'s inclined diameters	
	27 12	27 20	4,60	0½	31 29,0		
	28 42	28 50	4,60	2	31 30,2		
	30 56	31 4	0,90	8		Diſt. of ♀'s fartheſt limb from the Sun's neareſt	
	35 39	35 47	0,90	5		Ditto	
	44 25	44 32¾	0,85	19		Ditto	
	46 14	46 21¾	0,85	17		Ditto	
	50 16	50 23¾	0,85	8		Ditto	
	57 20	57 27½	0,80	20		Ditto	
	5 32 55	5 32 2	0,70	3	4 46,4	Ditto	
	34 52	34 59	0,65	23½	4 42,6	Ditto	J. D.
	41½	41 51¾	0,15	2	0 59,8	♀'s diameter on the ſcale	
	42½	42 36½	0,10	17	0 58,2	Ditto off	

1769	Times per clock	Apparent times	Parts of the micrometer		Micrometer reduced	Obſervations on the Tranſit of Venus continued.	
June	h ′ ″	h ′ ″	Inches	Vernier	′ ″		
♄ 3	5 43 37	5 43 43¾	0,15	2	0 59,8	♀'s diameter on the ſcale	
	45½	45 51¼	0,10	21	1 1,5	Ditto off	
			0,15	2	0 59,8	Ditto on	
	53—	53 6½	4,60	13½	31 34,8	⊙'s horizontal diameter	
	55—	55 6¼	4,60	14	31 35,2		
	59¼	59 21½	0,15	4	1 1,5	♀'s diameter on the ſcale	J. D.
6	0 41	6 0 47½	0,10	18	0 59,1	Ditto off	
	1 49	1 55½	0,10	21	1 1,5	Ditto ditto	
	3 30	3 36¾	0,50	18	3 36,6	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	4 40	4 46¾	0,50	14½	3 33,7	Ditto	
	6 55	7 1¾	0,50	11	3 30,8	Ditto	
	8 15	8 21¼	0,50	9	3 29,2	Ditto	
	15 6	15 12¼	0,45	15	3 13,6	Ditto	
	17 6	17 12¼	0,45	8	3 7,9	Ditto	
	19 6	19 12¼	0,45	1	3 2,1	Ditto	
	21 5	21 11¼	0,40	21	2 58,0	Ditto	W. W.
	25 27	25 33	0,40	6	2 45,7	Ditto	
	26 59	27 1	0,40	2 :	2 42,4	Ditto hazy	
	28 19	28 25	0,40	0 ::	2 40,8	Ditto hazy	
7	0 40	7 0 45½	The thread of light broke at the internal contact				W. W.
	0 43	7 0 48½	Ditto				J. D.
	18 56	7 19 1¼	The external contact very hazy, and the limbs badly defined				W. W.
	19 15	7 19 20¼	Ditto very hazy, and the limbs badly defined				J. D.

REMARKS.

1. All the meaſurements of Venus's diameter; and alſo all thoſe of the Sun, which are not ſaid to be horizontal, were taken with the micrometer, in the ſame direction that the laſt preceding diſtance of the limbs of Venus and the Sun was meaſured with.

2. We were obliged to alter the rack-work of the micrometer before we began to meaſure any diſtances of the limbs, &c. in order to make it take in the diameter of Venus, off the ſcale.

3. The heavens at the beginning, and for a conſiderable time both before and after, were frequently obſcured by clouds: but in the intervals, the air was very clear, and the Sun's limbs extreamely well defined.

4. Soon after Venus was half immerged, a bright creſcent, or rim of light, encompaſſed all that part of her circumference which was off the Sun; thereby rendering her whole periphery viſible. This continued very bright until within a few minutes of the internal contact, and then vaniſhed away gradually.

5. We took for the inſtant of the firſt internal contact, the time when the leaſt viſible thread of light appeared behind the ſubſequent limb of Venus: but before that time, Venus's limb ſeemed within that of the Sun, and his limb appeared behind hers in two very obtuſe points, ſeeming as if they would run together in a broad ſtream, like two drops of oil; but which nevertheleſs did not happen, but joined in a very fine thread, at ſome diſtance from the exterior limb of Venus. This appearance was much more conſiderable at the egreſs than at the ingreſs; owing, as we apprehend, to the bad ſtate of the air at that time. We took for the inſtant of internal contact, at the egreſs, the time when the thread of light diſappeared before the preceeding limb of the planet, from which time W. W. took notice that he had told about 24″ when the limbs of the Sun and Venus were apparently in contact: a circumſtance which he did not venture to attend to at the ingreſs.

6. We ſaw nothing like the appearance of an atmoſphere round Venus (unleſs the above-mentioned phænomena may be thought to proceed from thence) either at the beginning, end, or during the time of the tranſit: nor could we ſee any thing of a ſatellite; though we looked for it ſeveral times.

7. It may not be improper to add, that the hazineſs, complained of at the egreſs, was not owing to any accidental bad quality of the air at that time; it is continually ſo here to 10° or 12° above the horizon, and often even to 16° or 18°, in what may be called the cleareſt ſtate of the heavens.

Obſervations

Obſervations for determining the Magnetic Variations at Prince of Wales's Fort on the North-weſt Coaſt of Hudſon's Bay, by W. W.

The variation compaſs, which I received from Mr. Robertſon, by order of the Royal Society, was, when I received it, a very good one, as appeared to me from ſeveral trials which I made of it in London, before it was put on board the ſhip; but when we arrived in Hudſon's Bay, and were ready to make uſe of it, we had the mortification to find that the needle thereof had, by ſome cauſe or other, entirely loſt its magnetic virtue. As the cold was, by the time that we made this diſcovery, much more intenſe than it probably was at the time that Mr. Ellis complains of a ſimilar circumſtance happening to him in thoſe parts, I was naturally led to try whether I could not benefit by his experience, and accordingly removed the compaſs into the room where we lived; which was kept very warm by a large fire, and by the houſe ſtove; and there it remained ever after, but without the leaſt effect.

In order to remedy this misfortune as much as lay in my power, I applied to Captain Richards, as ſoon as he arrived in the river this year; and deſired he would ſend me his azimuth compaſs on ſhore, with which requeſt he very kindly complied the next day; but the cloudy weather prevented me from making any obſervations before the 22d of Auguſt.

The compaſs is of the common form, and I judged that it would be beſt to make the obſervations about noon, when the Sun's azimuths change the faſteſt, and to note the times by the clock; which I did in the following manner:

1769	Times by the clock	Magnetic azimuth	Variation weſt	
Auguſt	h ′ ″	° ′	° ′	
☽ 21	23 40 29	1 23 W	10 6	Theſe obſervations were made by Captain Richards; the compaſs having been removed, and the card re-adjuſted after the firſt
	44 48	2 0 W	9 17	
	49 35	3 20 W	9 2	
	52 53	4 30 W	9 6	
☉ 22	0 6 40,1			The Sun tranſited the meridian
	23 18	15 15 W	9 43	By myſelf; the compaſs having been moved, and the card re-adjuſted
	25 22	16 17 W	10 3	
	27 8	16 39 W	9 50	
	23 28 59	2 38 E	9 49	The compaſs placed as it was yeſterday before noon
	31 15	1 50 E	9 52	
	34 5	0 47 E	9 59½	
	42 20	2 0 W	10 3½	The compaſs removed, &c.
	44 10	2 38 W	10 4½	
	45 40	3 12 W	10 7½	
	49 45	4 21 W	9 57	Ditto
	52 44	5 20 W	9 51	
	54 4	5 40 W	9 50	
☽ 23	0 6 38,6			The Sun tranſited the meridian
	12 43	11 25 W	9 24	The compaſs removed, &c.
	25 13	15 28 W	9 18	The compaſs again removed, and the card re-adjuſted
	26 26	16 7 W	9 33	
	28 8	16 30 W	9 22	
	34 38	18 40 W	9 24	Ditto
	36 16	19 22 W	9 33½	
	The mean is		9 41½	

Such are the beſt obſervations of this kind, which I am able to lay before this honourable and learned Society. It gives me much concern to find that they differ ſo widely from one another; more eſpecially as I am certain that I made them with all the care and circumſpection that I was capable of, and with an inſtrument which ſeemed to me good of its kind. But I flatter myſelf it will be conſidered, that, in making obſervations with this inſtrument, there are two unavoidable ſources of error, viz. in adjuſting the card to the line on the ſide of the compaſs-box, and in making the ſhadow of the thread to fall on the line of the index: I may likewiſe add a third error, which may be committed in reading of the vernier, as it only ſubdivides to every 5′; and if all theſe ſhould happen to fall the ſame way, their ſum, I preſume, may be conſiderable (when an inſtrument of ſo ſmall a radius is uſed), in the hands of the moſt ſkilful obſerver.

The Latitude of Prince of Wales's Fort on the North-weſt coaſt of Hudſon's Bay, deduced from Obſervations of circumpolar Stars.

1769 By ζ Urſæ Majoris

Date of the Obſervation.				Latitude deduced					
Above the pole		Below the pole		90 Arch			96 Arch		
				°	′	″	°	′	″
Jan.	20	Jan.	18	58	47	29½	58	47	53
			20	58	47	27	58	47	51
	29		18	58	47	33½	58	47	52
			20	58	47	29	58	47	50
The means of theſe are				58	47	30¼	58	47	51½

1769 By η Urſæ Majoris

Jan.	20	Jan.	18	58	47	51	58	48	6
			21	58	47	42	58	48	7
			29	58	47	46¾	58	48	2½
			30	58	47	53	58	48	7½
	29		18	58	47	14	58	47	30½
			21	58	47	14¾	58	47	30¾
			29	58	47	9¼	58	47	36¼
			30	58	47	15½	58	47	32½
Means of theſe are				58	47	32	58	47	48

1769 By Capella

Date of the Obſervation				Latitude deduced					
Above the pole		Below the pole		90 Arch			96 Arch		
				°	′	″	°	′	″
Jan.	29	Jan.	28	58	47	23	58	47	36¾
	30			58	47	23½	58	47	31½
	31			58	47	24½	58	47	30¾
Febr.	5			58	47	28¼	58	47	39½
	8			58	47	34¼	58	47	48½
	9			58	47	31¾	58	47	37
Jan.	29	Jan.	29	58	47	30¼	58	47	44½
	30			58	47	30½	58	47	38¾
	31			58	47	31¼	58	47	38
Febr.	5			58	47	34¾	58	47	46¾
	8			58	47	41¾	58	47	51¾
	9			58	47	40¼	58	47	44¼
Jan.	29	Feb.	10	58	47	22½	58	47	35¼
	30			58	47	23	58	47	30½
	31			58	47	24	58	47	29¾
Febr.	5			58	47	26½	58	47	38½
	8			58	47	33¾	58	47	43½
	9			58	47	32¼	58	47	36
	14			58	47	32¼	58	47	32½
Jan.	29	Febr.	13	58	47	21	58	47	35¼
	30			58	47	21½	58	47	30½

1769 By Capella continued

Date of the Obſervation		Latitude deduced					
Above the pole	Below the pole	90 Arch			96 Arch		
		°	′	″	°	′	″
Jan. 31	Febr. 13	58	47	22½	58	47	29¾
Febr. 5		58	47	25¼	58	47	38½
8		58	47	32¾	58	47	43½
9		58	47	30¾	58	47	36
14		58	47	31¼	58	47	32½
24		58	47	31¼	58	47	36¾
Means of theſe are		58	47	29	58	47	37½

By α Perſei

Jan. 29	Jan. 29	58	47	23¾	58	47	28½
31		58	47	28¼	58	47	33¼
Febr. 14		58	47	33	58	47	38
Means of theſe are		58	47	28⅓	58	47	33¼

*** Theſe four ſtars paſſed the meridian to the ſouthward of the zenith, when above the pole; which circumſtance rendered them vaſtly convenient for determining the latitude of the place, as the error of the line of collimation of the quadrant is thereby entirely excluded, provided it did not alter in the interval between the obſervations.

1768 By the Pole Star

Date of the Obſervation			Latitude deduced					
Above the pole	Below the pole		90 Arch			96 Arch		
	1769		°	′	″	°	′	″
Decem. 2	January	1	58	47	25½	58	47	37
	Febr.	8	58	47	6	58	47	24½
		24	58	47	6½	58	47	24
3	January	1	58	47	32½	58	47	33
	Febr.	8	58	47	7½	58	47	24½
		24	58	47	8½	58	47	24
15	January	1	58	47	37	58	47	38½
	Febr.	8	58	47	18½	58	47	26
		24	58	47	18	58	47	25½
19	January	1	58	47	25½	58	47	37½
	Febr.	8	58	47	7½	58	47	25
1769		24	58	47	8½	58	47	24½
Jan. 18	January	1	58	47	25½	58	47	35½
	Febr.	8	58	47	6	58	47	23
		24	58	47	7½	58	47	22½
Means of theſe are			58	47	16	58	47	28⅕

The Latitude of Prince of Wales's Fort deduced from Obſervations of the Sun, and of ſuch ſtars as paſſed ſouth of the zenith.

By the Sun			Latitude deduced					
1768	Declination		90 Arch			96 Arch		
	°	′	″		°	′	″	°	′	″
			N.							
Sept. 20	0	42	9		58	48	19	58	47	57
21	0	18	44½		58	48	26½	58	48	14½
			S.							
22	0	4	40		58	48	15½	58	48	2
30	3	11	59½		58	48	15½	58	48	3
Oct. 1	3	35	19½		58	48	21½	58	48	33
14	8	32	49		58	48	18½	58	48	12
17	9	39	4		58	48	32½	58	48	7½
1769			N.							
June 20	23	28	5½		58	47	38½	58	47	26
22	23	27	40		58	48	10½	58	47	46
Auguſt 2	17	36	18½		58	48	12½	58	48	6½
5	16	48	8½		58	48	16	58	48	7
22	11	33	11		58	48	14	58	47	27½
The means of theſe are					58	48	15	58	48	0

By Capella				Latitude deduced					
1768	Declination			90 Arch			96 Arch		
	°	′	″	°	′	″	°	′	″
Oct. 13	45	44	10,3	58	47	34½	58	47	33½
14				58	48	3½	58	47	46½
17				58	47	48	58	47	39½
The means of theſe are				58	47	48½	58	47	39½

By α Perſei

Sept. 29	49	1	9	58	47	47	58	47	53½
Oct. 14	49	1	10	58	47	47	58	47	39½
17				58	47	44	58	47	21½
The means of theſe are				58	47	46	58	47	38¼

By α Lyræ			Latitude deduced	
1768	Declination		90 Arch	96 Arch
	° ′ ″		° ′ ″	° ′ ″
Oct. 16	38 34 49		58 47 21½	58 47 31½
17			58 47 24	48 47 35½
The means of these are			58 47 22¾	58 47 33½

By α Aquilæ			
Sept. 29	8 16 22½	58 47 51½	58 47 18½
Oct. 13		58 47 52	58 47 23
14		58 48 6	58 47 44
16		58 48 11	58 47 48½
The means of these are		58 48 0	58 47 33½

By α Cygni			
Oct. 2	44 27 48	58 47 21	58 47 0
13		58 47 26½	58 47 17
16		58 47 32	58 47 32
17		58 47 38	58 47 37
The means of these are		58 47 29½	58 47 21½

By α Perſei			
Nov. 16	49 1 11	58 47 50	58 47 20½
18		58 47 29	58 47 12½
19		58 48 11	58 48 2
28		58 48 0	58 47 34
Decem. 10		58 48 14	58 48 2
The means of these are		58 47 57	58 47 38

By Capella			
1768	Declination	90 Arch	96 Arch
	° ′ ″	° ′ ″	° ′ ″
Nov. 16	45 44 10½	58 47 54,2	58 47 29,0
18		58 47 43,–	58 47 12,2
28		58 47 26,7	58 47 18,5
29		58 47 38,9	58 47 32,1
The means of these are		58 47 40,7	58 47 23,–

1769	By β Draconis		
June 24	52 28 50	58 47 59	58 47 36
July 20		58 48 14	58 47 55
21		58 48 13	58 48 5
22		58 47 58	58 47 45
The means of these are		58 48 6	58 47 50¼

By γ Draconis			
June 24	51 31 29½	58 47 37	58 47 29
July 2		58 47 38½	58 47 40
7		58 47 43	38 47 46½
18		58 47 50½	58 47 43
20		58 47 44	58 47 40
21		58 47 43	58 47 44
22		58 47 48½	58 47 46
28		58 47 50	58 47 48
30		58 47 40½	58 47 39
Auguſt 4		58 47 48½	58 47 41
The means of these are		58 47 44½	58 47 41½

The Latitude of Prince of Wales's Fort deduced from Obſervations of Stars on the Northern Meridian.

By α Uriæ Majoris			
1768	Polar diſt.	90 Arch	96 Arch
	° ′ ″	° ′ ″	° ′ ″
Decem. 2	27 0 24	58 47 14	58 47 21
3		58 47 3	58 47 12
6		58 46 57	58 47 14
15		58 47 8	58 47 20
The means of these are		58 47 5¼	58 47 16¾

By γ Uriæ Majoris			
1768	Polar diſt.	90 Arch	96 Arch
	° ′ ″	° ′ ″	° ′ ″
Decem. 15	35 1 15	58 46 50	58 47 10
		58 46 58	58 47 8
		58 46 59	58 47 19
The means of these are		58 46 55⅔	58 47 12⅓

By η Urſæ Majoris		Latitude deduced	
1769	Polar diſt.	90 Arch	96 Arch
	° ′ ″	° ′ ″	° ′ ″
January 1	59 31 35	58 47 10	58 47 8
2		58 47 2	58 47 14
The means of theſe are		58 47 6	58 47 11

	° ′ ″	° ′ ″
The means of all the compariſons of ξ Urſæ Majoris	58 47 30¼	58 47 51½
Ditto of η Urſæ Majoris (conſidered as circumpolar)	58 47 32	58 47 48
Ditto of Capella ditto	58 47 29	58 47 37½
Ditto of α Perſei ditto	58 47 28½	58 47 33¼
Ditto of the Pole ſtar	58 47 16	58 47 28½
The means of all the circumpolar ſtars are	58 47 27	58 47 39¾
The means of α Urſæ Majoris	58 47 5½	58 47 16¾
Ditto of γ	58 46 55⅔	58 47 12⅓
Ditto of η	58 47 6	58 47 11
The means of all the ſtars taken on the northern meridian are	58 47 2,4	58 47 13⅗
And the means of the above two are	58 47 14¾	58 47 26½
The means of all the ſolar obſervations are	58 48 15	58 48 0
Ditto of Capella taken on the ſouthern meridian alone	58 47 48½	58 47 39½
Ditto of α Perſei	58 47 46	58 47 38¼
Ditto of α Lyræ	58 47 22¾	58 47 33½
Ditto of α Aquilæ	58 48 0	58 47 33½
Ditto of α Cygni	58 47 29½	58 47 21½
Ditto of Capella after the line of Collimation altered	58 47 40,7	58 47 23
Ditto of α Perſei ditto	58 47 57	58 47 38
Ditto of β Draconis, the line of collimation having again altered	58 48 6	58 47 50¼
Ditto of γ ———	58 47 44½	58 47 41½
The means of all the obſervations taken ſouthward of the zenith are	58 47 49	58 47 38
The means of the circumpolar and northern ſtars	58 47 14¾	58 47 26½
And, by taking the mean of both, the latitude is North	58 47 32	58 47 32¼

The error of the line of collimation of the quadrant was 23″,6 for the 90 arch, and 19″,7 for the 96 arch, to be ſubtracted from all zenith diſtances, from the beginning of September, 1768, to the latter end of October; from about which time, till towards the latter end of December, it appears to have been 29″,4′ for the 90° arch, and 36″,7 for the 96 arch, to be added to all zenith diſtances taken in that interval. About the latter end of December it altered again, but I had no opportunity of determining its quantity, and ſeemed to be pretty conſtant all the month of January, 1769; but, about the beginning or middle of February, it began again to alter, and continued uncertain until the middle or latter end of June, when it became conſtant again, and ſeemed to me to be, by the obſervations of β and γ Draconis, 21″,6 and 15″,5 to be ſubtracted from the 90 and 96 arches, reſpectively.

W. W.

A TABLE of the EQUATIONS to Equal Altitudes. Lat. 58° 47′½.

Half the Interval between the Obſervations.

The ☉'s long'tude	h ′ II 20	h ′ II 30	h ′ II 40	h ′ II 50	h ′ III 0	h ′ III 10	h ′ II 20	h ′ III 30	h ′ III 40	h ′ III 50	h ′ IV 0	h ′ IV 10	h ′ IV 20	h ′ IV 30	h ′ IV 40	h ′ IV 50	h ′ V 0	h ′ V 10	h ′ V 20	h ′ V 30
♑ — 0	26,6	26,8	27,0	27,3	27,6	27,9	28,3	28,7	29,2	29,6	30,1	30,6	31,2	31,8	32,4	33,1	33,8	34,5	35,3	36,2
5	25,9	26,1	26,4	26,7	27,0	27,4	27,8	28,2	28,7	29,1	29,6	30,1	30,7	31,3	31,9	32,6	33,3	34,1	35,0	35,9
10	25,2	25,4	25,7	26,0	26,3	26,7	27,1	27,5	28,0	28,4	28,9	29,5	30,1	30,7	31,3	32,0	32,7	33,5	34,4	35,3
15	24,3	24,5	24,8	25,1	25,4	25,8	26,2	26,6	27,1	27,6	28,1	28,6	29,2	29 8	30,5	31,2	31,9	32,6	33,6	34,5
20	23,2	23,5	23,8	24,1	24,4	24,8	25,2	25,6	26,1	26,6	27,1	27,6	28,2	28,8	29,5	30,2	30,9	31,6	32,6	33,5
25	22,0	22,3	22,6	22,9	23,2	23,6	24,0	24,4	24,8	25,3	25,9	26,4	26,9	27,6	28,3	29,0	29.7	30,4	31,4	32,3
♌ — 0	20,7	21,0	21,3	21,6	21,9	22,3	22,7	23,1	23,6	24,0	24,5	25,0	25,6	26,2	26,9	27,6	28,4	29,1	30,0	30,9
5	19,3	19,6	19,9	20,2	20,5	20,9	21,3	21,7	22,1	22,6	23,1	23 6	24,1	24,7	25,3	26,0	26,8	27,6	28,4	29,3
10	17,9	18,1	18,4	18,7	19,0	19,3	19,7	20,1	20,5	21,0	21,5	22,0	22,5	23,0	23,6	24,3	25,1	25,8	26,6	27,5
15	16,3	16,5	16,8	17,1	17,4	17,7	18,1	18,4	18,8	19,2	19,7	20,2	20,6	21,2	21,8	22,5	23,2	23,8	24,6	25,4
20	14,7	14,9	15,1	15,4	15,7	16,0	16,3	16,6	17,0	17,4	17,9	18,3	18,7	19,2	19,8	20,4	21,1	21,7	22,4	23,2
25	11,0	13,2	13,4	13,6	13,9	14,1	14,4	14,8	15,2	15,5	15,9	16,2	16,6	17,1	17,7	18,2	18,8	19,4	20,0	20,7
♍ — 0	11,3	11,4	11,6	11,8	12,0	12,2	12,5	12,8	13,1	13,4	13,8	14,2	14,4	14,9	15,5	15,9	16,4	16,9	17,5	18,1
5	9,5	9,6	9,7	9,9	10,1	10,3	10,5	10,8	11,0	11,3	11,6	11,8	12,1	12,6	13,1	13 4	13,8	14,3	14,8	15,4
10	7,6	7,7	7,8	7,9	8,1	8,3	8,5	8,7	8,9	9,1	9,4	9,5	9,7	10,1	10,6	10,9	11,2	11,6	12,0	12,5
15	5,7	5,8	5,9	6,0	6,1	6,2	6,4	6,6	6,8	6,9	7,1	7,2	7,3	7,6	8,0	8,2	8,5	8,8	9,1	9,4
20	3,8	3,8	3,9	4,0	4,1	4,2	4,3	4,4	4,6	4,6	4,8	4,9	4,9	5,1	5,4	5,5	5,7	5,9	6,1	6,3
25	1,9	1,9	2,0	2 0	2,1	2,1	2,2	2,2	2,3	2,3	2,4	2,5	2,5	2,6	2,7	2,8	2,9	3,0	3,1	3,2
III + 0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
5	1,9	1,9	2,0	2.0	2,1	2,1	2,2	2,2	2,3	2,3	2,4	2,5	2,5	2,6	2,7	2,8	2,9	3,0	3,1	3,2
10	3,8	3,8	3,9	4,0	4,1	4,2	4,3	4,4	4,6	4,6	4,8	4,9	4,9	5,1	5,4	5,5	5,7	5,9	6,1	6,3
15	5,7	5,8	5,9	6,0	6,1	6,3	6,4	6,6	6,8	6,9	7,1	7,2	7,4	7,6	8,0	8,2	8,5	8,8	9,1	9,4
20	7,6	7,7	7,8	7,9	8,1	8,3	8,5	8,7	9,0	9,2	9,4	9,5	9,7	10,1	10,6	10,9	11,2	11,6	12,0	12,5
25	9,4	9,5	9,7	9,8	10,0	10,2	10,5	10,8	11,1	11,3	11,6	11,8	12,0	12,5	13,1	13,4	13,8	14,3	14,8	14,3
IV + 0	11,2	11,3	11,5	11,7	11,9	12,1	12,5	12,8	13,1	13,4	13,7	14,0	14,4	14,9	15,4	15,8	16,3	16,8	17,4	18,0
5	12,9	13,1	13,3	13,5	13,7	14,0	14,4	14,7	15,0	15,4	15,7	16,2	16,6	17,1	17,6	18,1	18,7	19,3	19,9	20,6
10	14,6	14,8	15,0	15,2	15,5	15,8	16,2	16,5	16,9	17,3	17,7	18,2	18,7	19,2	19,7	20,3	20,9	21,6	22,3	23,0
15	16,2	16,4	16,6	16,9	17,2	17 6	18,0	18,3	18,6	19,1	19,5	20,0	20,6	21,1	21,7	22,3	23,0	23,7	24,4	25,2
20	17,7	17,9	18,2	18,5	18,8	19,2	19,6	19,9	20,3	20,8	21,3	21,8	22,4	22,9	23,5	24,2	24,9	25,6	26,4	27,2
25	19,1	19,4	19,7	20,0	20,3	20,7	21,1	21,4	21,8	22,3	22,9	23.4	24,0	24,6	25,2	25 9	26,6	27,3	28,1	29,0
V + 0	20.5	20,8	21,1	21,4	21,7	22,1	22,5	22,9	23,3	23,8	24,3	24.8	25,4	26,1	26,7	27,5	28,1	28,9	29,7	30,6
5	21,7	22,0	22,4	22,7	23,0	23,4	23,8	24,2	24,5	25,1	25,6	26,1	26,7	27,4	28,1	28,8	29,4	30,2	31,1	32,0
10	22,9	23,2	23,5	23,8	24,2	24,5	24,9	25,3	25,8	26,2	26,7	27,2	27 8	28,5	29,3	30,0	30,6	31,4	32,3	33,2
15	24,0	24,2	24,5	24,8	25,2	25,5	25,9	26,3	26,8	27,2	27,7	28,2	28,8	29,5	30,3	31,0	31,6	32,4	33,2	34,1
20	24,9	25,1	25,4	25,7	26,1	26,4	26,8	27,2	27,7	28,1	28,6	29,1	29,7	30,4	31,1	31,8	32,4	33,2	34.0	34,9
25	25,7	25,9	26,1	26,4	26,8	27,1	27,5	27,9	28,4	28,8	29,3	29,8	30,3	31,0	31,7	32,3	33,0	33,7	34,5	35,4
VI + 0	26,3	26,5	26,7	27,0	27,4	27,7	28,1	28,5	28,9	29,3	29,8	30,3	30,8	31,4	22 1	32,7	33,4	34,1	34,9	35,8
5	26,7	26,9	27,1	27,4	27,8	28,1	28,4	28,8	29,2	29,6	30,1	30,5	31,0	31,6	32,3	32,8	33,5	34,3	35,0	35,8
10	27,0	27,2	27,4	27 7	28,0	28,3	28,6	28,9	29,3	29,7	30,2	30,6	31,1	31,7	32,3	32,8	33,5	34,3	35,0	35,7
15	27,0	27,2	27,4	27,7	28,0	28,3	28,6	28,9	29,2	29,6	30,1	30,5	31,0	31,5	32,0	32,5	33,2	33,9	34,6	35,3
20	26,9	27,1	27,3	27,5	27,8	28,1	28,4	28,6	28,9	29,3	29,8	30,2	30,6	31,0	31,4	32,1	32,8	33,4	34,1	34,7
25	26,6	26,7	26,9	27,1	27,3	27,6	27,9	28,1	28,4	28,8	29,2	29,6	29.9	30,3	30,8	31,4	32,0	32,6	33,2	33,8
VII + 0	26,1	26,1	26,3	26,5	26,7	26,9	27,2	27,4	27,8	28,1	28,4	28,7	29,0	29,4	29,9	30,4	31,0	31,6	32,1	32,7

The inſtruments uſed in making the preceding obſervations were:

1. A clock, made by Mr. Ellicot, with an apparatus for correcting the effects of heat and cold; the ſame which Meſſieurs Maſon and Dixon had to the Cape of Good Hope in the year 1761.

2. An aſtronomical quadrant, made by Mr. Bird, of one foot radius.

3. Two reflecting teleſcopes, of two feet focus, made by Mr. Short; and a divided object-glaſs micrometer, made by the ſame gentleman, of 501,45 inches focal length.

We uſed the micrometer with a magnifying power of 60; the contacts of Venus with the Sun's limb were obſerved with a magnifying power of 120, and all the other obſervations with one of 90.

Both the thermometers, uſed in the preceding obſervations, were according to Fahrenheit's ſcale; and the characters + and —, which are annexed to their altitudes, denote that they ſtood ſo many degrees above or below the cypher reſpectively: where neither of thoſe characters appears, the number is to be underſtood above the cypher.

LXVI. *Extract*