

“ the clock, whenever he should call to him ;
 “ in which respect, he is of opinion, he made
 “ no mistake, though, possibly, he might make
 “ one with regard to the minute, by setting down
 “ *one too many* at the egress; which he now
 “ thinks there is some cause to believe he did.”

J. B.

XXXVIII. *Observations on the same Transit ;
 and on an Eclipse of the Moon, May 8,
 1761 ; and of the Sun, on the 3d of June
 1761 : In a Letter to the Rev. Thomas
 Birch, D. D. Secretary to the Royal So-
 ciety, from Mr. Peter Wargentín, Secretary
 to the Royal Academy of Sciences in Sweden,
 and F. R. S.*

Read Nov. 12,
 1761. **L**itteræ hisce inclusæ, ad te et clarif-
 simum Dollondium scriptæ, quas
 amicus meus, Dominus Klingenshierna (principis
 Suec. hæreditarii præceptor) transmittendas mihi tra-
 didit, occasionem mihi suppeditant, paucis te invi-
 sendi, tibi que communicandi observationes nonnullas
 astronomicas, nuper à me habitas, in observatorio
 Stockholmiensi, cujus elevatio poli est $59^{\circ} 20' 31''$,
 differentia autem meridian. ab observatorio Gren-
 vicensi $1^{\text{h}} 12' 1''$.

Si illas dignas judicaveris, quæ illustrissimæ Socie-
 tati Regiæ offerantur, erit id mihi gratissimum. Quid-
 quid

quid sit, me tua in scientias merita magni facere profiteor, et sincero cum affectu sum,

Reverendi nominis tui
Cultor studiosissimus,

Stockholmizæ,
die 9 Junii 1761.

Petr. Wargentini,
Acad. R. Scient. Suec. Secret.

Eclipseos Lunæ totalis, die 18 Maii hujus anni, observatæ, quædam momenta.

| | h | ' | " | |
|--------------------------------------------------------------------|----|----|----|--------------------------|
| P enumbræ densa in margine Lunæ } percipitur - - - - - } | 9 | 31 | 30 | vesp. |
| Initium veræ eclipseos circiter æstiatum - - - - - } | 9 | 32 | 20 | |
| Grimaldus totus immergit - - - | 9 | 35 | 50 | |
| Schickardus totus absconditur - - | 9 | 38 | 48 | |
| Galilæus occultatus in umbra disparet | 9 | 39 | 47 | |
| Gassendus delitescit - - - - - | 9 | 43 | 28 | |
| Aristarchus umbram ingreditur - | 9 | 48 | 10 | |
| Tycho incipit immergere - - - | 9 | 51 | 5 | |
| ———— totus abit - - - - - | 9 | 52 | 18 | |
| Copernicus incipit tenebris offundi | 9 | 54 | 16 | |
| ———— totus fere absconditus - | 9 | 55 | 48 | |
| Eratosthenes immergit - - - - - | 10 | 4 | 0 | |
| Umbra ad Platonem - - - - - | 10 | 14 | 53 | |
| Archimedes evanescit - - - - - | 10 | 15 | 26 | |
| Plato totus est in umbra - - - - - | 10 | 16 | 50 | |
| Plinius se subducit - - - - - | 10 | 18 | 31 | |
| Proclus hæret in margine umbræ - | 10 | 29 | 38 | |
| Vix apparet vestigium Procli - - | 10 | 30 | 28 | |
| Mare Crisium incipit immergere - | 10 | 31 | 30 | |
| Idem totum tenebræ occuparunt - | 10 | 35 | 24 | |
| Immersio Lunæ totalis in umbram | 10 | 41 | | } vel paulo } ferius. |

Margo tamen Lunæ, qui ultimus immerferat, satis clarâ luce conspicuus fuit per 5 vel 6 temporis minuta, et referebat nudis oculis speciem stellæ secundi ordinis. Hora autem 10^h 52' ille ipse margo, cum tota reliqua Luna, ita prorsus disparuerat, ut nullum ejus vestigium, vel nudis vel armatis oculis, sensibile restaret, cœlo licet sereno, et stellis vicinis in tubo conspicuis. Sub ipsa quoque immerfione, illa Lunæ portio, quæ in umbram inciderat, penitus evanescebat, aliter sane quam fieri solet etiam in eclipsibus Lunæ centralibus; plerumque enim Luna, quamvis in medio umbræ, apparere solet lumine quodam subobscurò, per atmosphæram refracto.

Antequam autem Luna sic dispareretur, animadverti stellam (Libræ) in vicinia marginis orientalis, quam Luna mox occultatura videbatur.

| | | |
|-----------------------------------------|-------|----------|
| | h ' " | |
| Eam omni studio prosecutus vidi demum, | } | 10 52 39 |
| oculi ictu citius, exstingui occultatam | | 11 43 28 |
| Ejusdem stellæ emerfio contigit inter | } | 11 43 28 |
| 11 ^h 43' 8'' et - - - - - | | |

Emergebat à parte Lunæ prorsus invisibili: ejusque sub Luna semita borealior paulo erat diametro Lunæ horizontali.

Postquam Lunam amissam diu quæxivissem, reperi tandem tubo bipedali, hora 11^h 30', vix sensibili luce circa marginem orientalem suffusam. Hora 11^h 33' ejus quoque vestigium acutioribus se offerebat oculis, instar tenuissimæ nubeculæ. Plusquam dimidius autem Lunæ discus occidentalis mansit prorsus invisibilis, et erant limites inter visibilem et invisibilem partem valde tortuosi; circa margines autem Lunæ erat lumen illud intensius et magis extensum, quam circa centrum. Cœpta vero emerfione, quidquid nondum emerferat, plane visum non feriebat.

Lunæ

| | h | ' | " |
|--------------------------------------------------------------------------|----|----|----|
| Lunæ margo juxta Grimaldum lucidior } exspendescere cœpit - - - - - } | 12 | 13 | 0 |
| Initium emersionis veræ circiter - - - - - | 12 | 15 | 0 |
| Grimaldus incipit emergere - - - - - | 12 | 18 | 37 |
| ----- totus luci restitutus - - - - - | 12 | 19 | 32 |
| Galilæus prominet - - - - - | 12 | 20 | 37 |
| Aristarchus apparet - - - - - | 12 | 22 | 2 |
| ----- jam totus est illustris - - - - - | 12 | 22 | 47 |
| Copernici nucleus lucem adspicit - - - - - | 12 | 37 | 46 |
| Tychonis nucleus incipit eluctari tenebris | 12 | 44 | 35 |
| ----- totus evasit - - - - - | 12 | 45 | 52 |
| Plinius prorepat - - - - - | 13 | 0 | 47 |
| Promontorium acutum incipit prominere | 13 | 6 | 50 |
| Mare Nectaris totum emerfit - - - - - | 13 | 9 | 37 |
| Snellius emergit - - - - - | 13 | 12 | 31 |
| Totum Mare Crisium luci restitutum - | 13 | 17 | 26 |
| Langrenus porrigit latus - - - - - | 13 | 18 | 15 |
| Finis vera eclipseos circiter - - - - - | 13 | 21 | 8 |
| Non nisi penumbra in Luna est residua - | 13 | 23 | 0 |

Observationes hæ habitæ sunt cum tubo 9 pedum. Dominus Strömer, astron. prof. Upsaliensis, sociam mihi in observanda hac eclipsi commodavit operam, usus tubo 5 pedum. Ille pleraque immerfionis momenta 20'' vel 30'' citius, emersionis autem tantundem fere tardius notavit.

Eclipsis Solis, die 5 Junii.

| | | | |
|----------------------------------------|-----|----|---------|
| Sol ortus est hac die quartâ fere dia- | } h | ' | " |
| metri horizontali parte multa- | | | |
| tus, hora - - - - - | 3 | 0 | 0 mane. |
| Finis tantum hujus eclipseos utcun- | } 3 | 12 | 32 |
| que observari potuit; contigit ille | | | |

Transitus Veneris per discum Solis, die 6 Junii.

| | | | | | |
|--------------------------------------------------------------------------------------------------------------------|---|---|----|----|--------|
| Venus jam aliqua sui parte discum | } | 3 | 21 | 37 | A. M. |
| Solis occupaverat - - - - | | | | | |
| Propter vehementem marginum Solis undulationem, primum contactum exteriorem accu- ratus notare non potui. | | | | | |
| Contactus interior, vel immersio | } | 3 | 39 | 23 | |
| totalis, meo quidem judicio con- tigit - - - - - | | | | | |
| At D ^{us} Klingenstierna contendit, | } | 3 | 39 | 29 | |
| eum demum contigisse - - | | | | | |
| Initium emerfionis, contactu inte- riore, certè mihi apparuit - - | } | 9 | 30 | 8 | |
| Idem contactus ex observatione Do- mini Klingenstierna - - - | | | | | |
| Finis emerfionis vel contactus ulti- mus, ex judicio D ⁱ Klingenstierna | } | 9 | 48 | 6, | vel 8. |
| Meo autem, neutiquam ante - - | | | | | |
| | | 9 | 48 | 9 | |

Ego hac occasione adhibui tubum 20 ped. Suec. cum oculari, focum ad 3 digit. distant. habente.

Dominus autem Klingenstierna usus est novo illo excellentissimo tubo Dollondiano 10 pedum, cum oculari medio, vel mediocriter objecta ampliante.

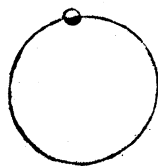
Reliquas meas observationes circa hunc transitum nondum in justum ordinem redegi.

Diameter Veneris in Sole erat quamproxime 5''.

Notatu dignum est, quod margo Veneris, qui jam emerferat, conspiciendum se præbuerit etiam extra Solem,

Solem, debili quadam luce, idque sub tota fere emersione, in hunc fere modum.

Sive illa in margine Veneris apprens, inflectioni radiorum Solis, sive refractioni in atmosphæra Veneris, fit tribuenda, disquirant alii.



XXXIX. *An Account of the Observations made on the same Transit in Sweden: In a Letter from Mr. Peter Wargentin, Secretary to the Royal Academy of Sciences in Sweden, and F. R. S. to Mr. John Ellicot, F. R. S. Translated from the French.*

S I R,

Stockholm, Aug. 7, 1761.

Read Nov 12, 1761. **I**N a letter, dated June 8th, I communicated to Dr. Birch, Secretary to the Royal Society, my observations upon the transit of Venus. Having since received some other good observations of this phænomenon, I thought the communicating them to you, would give you some pleasure.

At Torneo in Lapland, Messieurs Lagerborn and Hellant very happily observed both the entrance and exit of Venus, with telescopes of 32 and 20 feet focal lengths. The principal times observed were as follows:

Exterior