

23<sup>h</sup> 31<sup>m</sup> 38<sup>s</sup> —12° 59'

Grosser verwaschener Nebel, II. Classe; steht — 45° + 6' vor Nebel: Gen. Cat. 5000 = I 111; es ist höchst auffallend, dass weder H, h., D'Arrest noch L. Rosse diesen Nebel gesehen haben als sie I 111 beobachteten und D'Arrest sogar den Stern 9<sup>m</sup> angiebt, bei welchem nördlich dieser neue Nebel steht.

23. 33. + —21. 2.

Nebel gut II. Classe, länglich, 2' Durchmesser; kein bekannter Stern in der Nähe.

Die mit einem \*chen bezeichneten Nebel sind nach Dreyer's Suppl. Cat. schon früher von Anderen aufgefunden worden.

Arcetri Mai 1878.

Wilhelm Tempel.

### On, the Transit of Mercury and the Longitude of the Windsor Observatory.

The egress of Mercury was partly observed with the 4½-inch equatorial and a power of 180. Owing to thin clouds the images were not so well defined as in the transit of Venus. At 20<sup>h</sup>48<sup>m</sup>19<sup>s</sup>3, the thread of light between the limbs of the sun and planet being still pretty broad, the planet threw out a ligament and became pear-shaped as in Fig. 1. The ligament was nearly as black as the planet itself and the estimation of the time of apparent interval coincidence of limbs was rendered extremely difficult by its presence. I estimated this phase to be twenty two seconds later than the formation of the ligament. At 20<sup>h</sup>49<sup>m</sup>0<sup>s</sup>3 and 20<sup>h</sup>49<sup>m</sup>20<sup>s</sup>3 I noted the appearance to be similar to that presented in Figs. 2 and 3. The central bisection of the planet appeared to take place at 20<sup>h</sup>50<sup>m</sup>14<sup>s</sup>3. Owing to the clouds becoming suddenly thicker and rendering the objects indistinct I was unable to observe the external contact with satisfaction. I did not observe any halo or ring round the planet, or anything like a satellite. The sun was free from spots.

I have recently completed a discussion of the longitude of my observatory from twelve occultations of well determined stars, the Greenwich corrections to the moon's places being taken into account. Adopting — 33°36'28"9 as the astronomical latitude of the observatory, and Bessel's

ratio of the earth's axes, I get — 33°25'53"0 and 9.9995576 as the geocentric latitude and log. radius. These values being employed in the reductions I have obtained the following results for longitude from the occultations: —

| Date           | Star                 | Longitude E.                                      |
|----------------|----------------------|---|
| April 18. 1866 | — B. A. C. 1468 ..   | 10 <sup>h</sup> 3 <sup>m</sup> 22 <sup>s</sup> 07 |
| Oct. 15. 1866  | — " 6267 ..          | 10.3.28.48  |
| Febr. 27. 1868 | — μ Piscium .....    | 10.3.25.74  |
| Mar. 2. 1868   | — m Tauri .....      | 10.3.32.32  |
| Febr. 17. 1869 | — ξ' Ceti .....      | 10.3.27.34  |
| Febr. 24. 1869 | — δ Cancri .. .      | 10.3.17.93  |
| Febr. 11. 1870 | — ζ Tauri .....      | 10 3.19.54  |
| Nov. 30. 1870  | — ψ' Aquarii .....   | 10.3.31.40  |
| April 1. 1873  | — A' Tauri .....     | 10.3.14.09  |
| Sept. 2. 1873  | — σ Sagittarii ..... | 10.3.25.82  |
| Febr. 27. 1874 | — ψ' Cancri .....    | 10.3.25.86  |
| May 30. 1874   | — δ Scorpii .....    | 10.3.18.49  |

The mean of these results is 10<sup>h</sup>3<sup>m</sup>24<sup>s</sup>09 E and if to it we add 1<sup>m</sup>30<sup>s</sup>04, the difference of the longitudes of the Sydney and Windsor Observations, as determined by telegraphic signals in 1865 we have 10<sup>h</sup>4<sup>m</sup>54<sup>s</sup>13 E, as the longitude of the former from Greenwich. The values deduced by the Rev. W. Scott and Mr. Stone from moon culminations are respectively 10<sup>h</sup>4<sup>m</sup>45<sup>s</sup>74 and 10<sup>h</sup>4<sup>m</sup>47<sup>s</sup>32 so that the occultation results would indicate a large positive correction. I may state that the occultations were all disappearances at the moon's dark limb.

This is, I believe, the first attempt in the Colony to deduce the longitude from lunar occultations of stars.

Windsor N. S. Wales May 6 1878.

John Tebbutt.

