

IV. *Some Observations of the Mercury's Altitude, with the Changes of the Weather at Emüy in China. Lat. 24° 20'. N°.*

By Mr. *James Cunningham.*

October 1698.

From the 1st. to the 8th. fair and clear Weather, the Mercury's Altitude, 29¹⁴/₃₀ Digit.

From the 8th. to the 11th. close and cloudy Weather, the Mercury falling to 29²²/₃₀ Digit.

11th. Close Weather, somewhat cloudy.

12th. Close Weather blowing fresh at *North-east*.

13th. and 14th. close and cloudy Weather, with much Rain, and fresh Winds from *North-east* to *North-west*.

The Tide, (which commonly flows 3 Fathoms) did flow above half a Foot higher 3 Days after the full Moon, then it did on the full Moon at the Equinox.

15th. Fair and clear Weather, with small Gales at *North-east*.

From the 15th. to the 24th. fine moderate fair Weather, with small Gales about *North-east*, and to the 31th. Winds and Weather variable.

November the 1st. to the 15th. variable, close and cloudy Weather, with some Rain, and variable Gales round the Compass.

3 15th. Fair and clear Weather, with small Gales at *North-east*, in the Morning the Mercury's Altitude 29²²/₃₀ Digit, at Noon 29¹⁴/₃₀; and at ten of the Night, being cold, rising to 29¹⁶/₃₀.

16th.

7. 16th. At Sun-rising very cold, the Mercury's Altitude $29\frac{18}{32}$. At Noon fair and pleasant Weather, the Mercury falling to $29\frac{17}{32}$. At Night cold, rising to $29\frac{18}{32}$. The Wind at *North-east*.

8. 17th. This Morning cold, the Mercury at $29\frac{18}{32}$, fair and clear Weather all Day, and at Night blowing somewhat fresh at *North-east*, the Mercury at $29\frac{17}{32}$.

9. 18th. This Morning cold, the Mercury at $29\frac{17}{32}$. All Day fair and pleasant Weather, the Mercury falling to $29\frac{16}{32}$, and by Noon to $29\frac{12}{32}$. The Weather fair, somewhat close and cloudy; the Afternoon Sun-shining and Warm, and at Night temperate, the Mercury continuing at $29\frac{12}{32}$. Small Winds at *North east*, and almost Calm.

10. 20th. A pleasant Sun shining Morning, the Mercury at $29\frac{15}{32}$. At Noon overcast, and cloudy, with little Wind at *North-east*, the Mercury falling to $29\frac{10}{32}$. In the Afternoon some drops of Rain, with close Weather, and at Night the Mercury continuing at $29\frac{10}{32}$, with small Westerly Winds. Some Rain in the Night.

11. 21st. Close and cloudy Weather, with small Gales at *North-east*, the Mercury at $29\frac{10}{32}$ in the Morning, and continued so all day, with some drops of Rain in the Afternoon, the Gale freshning, and a shower of Rain at 8 of the Night, the Mercury rising to $29\frac{12}{32}$.

12. 22d. Gray and cloudy Weather all Day, with fresh Gales between *East* and *North-east*. the Mercury at $29\frac{12}{32}$; and at Night rising to $29\frac{17}{32}$. Fair Weather, somewhat Cloudy.

13. 23d. A very cold Morning, fair and clear, with fresh Gales from *North-east* to *North*, the Mercury at 30 Digit. Fair and clear all Day, with a moderate Gale about *North east*: Clear and very cold all Night, the Mercury continuing at 30 Digit.

14. 24th.

4. 24th. A fair, clear, and cold Morning, the Wind at *North-east*, a moderate Gale, the Mercury continuing at 30 Digit. A clear Sun-shining Day, cold and clear all Night, the Mercury as before.

8. 25th. A sharp cold Morning, fair and clear, with a moderate Gale at *North-west*, the Mercury fallen to $29\frac{18}{30}$. All Day fair and pleasant, vety warm, and no Wind, the Mercury falling at Noon to $29\frac{15}{30}$, and at Night being somewhat Hazy and Calm withal, to $29\frac{14}{30}$.

h. 26th. temperate Weather all Night, and this Morning somewhat close and hazy, and no Wind, the Mercury at $29\frac{14}{30}$, and towards Noon growing clearer and warmer, rising to $29\frac{16}{30}$. Small Brizes at *North-east*, at Night falling to $29\frac{14}{30}$, temperate Weather.

©. 27th. Fine pleasant Weather all Day, with small variable Brizes from the *North* to *west*, and about to *South*, the Mercury in the Morning at $29\frac{14}{30}$, and at Noon falling to $29\frac{13}{30}$, and at Night rising to $29\frac{14}{30}$. Fair Weather and Calm.

∩. 28th. Fine moderate Weather, with a Gale at *North east*, the Mercury at $29\frac{14}{30}$. In the Afternoon the Gale freshn'd, the Weather somewhat Cloudy, and at Night the Mercury was at $29\frac{16}{30}$. blowing fresh.

♂. 29th. Fair and clear Weather, somewhat cold this Morning, with a fresh Gale at *North-east*; the Mercury at $29\frac{18}{30}$. Fine pleasant Weather all Day, with small Gales at *North-east*, at Noon the Mercury falling to $29\frac{15}{30}$, and at Night being clear and somewhat cold, rising to $29\frac{17}{30}$.

♀. 30th. Fair and pleasant Weather, with small Gales at *N. E.* the Mercury at $29\frac{17}{30}$. At Noon a fresh Gale, the Mercury falling to $29\frac{14}{30}$. At Night temperate Weather, and little Wind, the Mercury rising to $29\frac{16}{30}$.

D E C E M B E R.

4. 1st. Fine temperate Weather, with small Gales at *North-east*, the Mercury at $29\frac{16}{10}$ in the Morning. Fair Weather all Day, and small Brizes at *North-east*, the Mercury at Noon falling to $29\frac{14}{10}$, and in the Evening to $29\frac{12}{10}$, and at Night rising to $29\frac{14}{10}$, being fine clear Weather.

5. 2^d. Fair and temperate Weather, somewhat Cloudy, and overcast with small Gales at *North-east*, the Mercury at $29\frac{14}{10}$, and at Night rising to $29\frac{15}{10}$.

6. 3^d. A clear and cold Morning, with a fine sharp Gale at *North*, and by *East*, the Mercury at $29\frac{17}{10}$. A cold Air all Day, the Mercury at Noon falling to $29\frac{15}{10}$, and at Night the Gale freshning made it colder, the Mercury rising to $29\frac{18}{10}$.

7. 4th. A sharp Morning with a fresh Gale at *North* and by *East*, the Mercury at $29\frac{18}{10}$. Fair and clear all Day, with a small *Northerly* Gale, the Mercury by Noon falling to $29\frac{15}{10}$. A serene temperate Night, and almost Calm, the Mercury as before.

8. 5th. A fine clear Morning, with a moderate Gale at *South-west*, somewhat cold, the Mercury at $29\frac{15}{10}$. At Noon a small Brize at *East* by *South*, pleasant Weather, the Mercury at $29\frac{15}{10}$. At Night a small Gale at *South* by *East*, fair and temperate Weather, somewhat hazy, the Mercury at $29\frac{13}{10}$.

9. 6th. This Morning somewhat close and Cloudy, with a few drops of Rain, the Weather temperate, with small *Southerly* Brizes, the Mercury at $29\frac{13}{10}$. The Afternoon Calm, and somewhat Hazy, the Mercury falling to $29\frac{10}{10}$. At Night overcast and Cloudy, with some Rain, blowing fresh at *North*, the Mercury rising to $29\frac{14}{10}$.

♀. 7th. A gray Morning, clearing up with a fresh Gale at *North-east*, the Mercury at $29\frac{17}{30}$. In the Afternoon the Horizon a little Hazy, the Mercury falling to $29\frac{14}{30}$. At Night clearer, with a fresher Gale, the Mercury rising to $29\frac{18}{30}$. A very cold Night.

♂. 8th. A sharp clear Morning, with a fine Gale at *North-east*, the Mercury at 30 Digit. At Noon falling to $29\frac{18}{30}$, a fine Sun-shining Day. At Night cold and clear, a small Gale at *North-east*, the Mercury rising to 30 Digit.

♀. 9th. This Morning as the last, all Day and Night the same, and the Mercury also.

♂. 10th. A cold Morning, somewhat Foggy, with a fine Gale at *North-east*, the Mercury at 30 Digit, all Day Fair, Clear and Sun shining. At Night cold, the Mercury at $29\frac{18}{30}$.

♂. 11th. A cold Morning, with a moderate Gale at *North-west*, the Mercury at $29\frac{18}{30}$. All Day fair and clear, the Mercury falling to $29\frac{16}{30}$. At Night a fresh Gale at *North-east*, the Mercury at $29\frac{18}{30}$.

♂. 12th. A gray cold Morning, somewhat Cloudy, with a hazy Horizon, a fresh Gale at *North-east*, and the Mercury at $29\frac{18}{30}$, towards Noon falling to $29\frac{17}{30}$, with little Wind, and fair Weather; at Night calm and somewhat cold, the Mercury rising to $29\frac{18}{30}$.

♂. 13th. A fine pleasant Morning, with a small Brize at *North-west*, the Mercury at $29\frac{18}{30}$. At Noon a small Gale at *North-east*, and in the Afternoon Calm, the Mercury falling to $29\frac{14}{30}$. All day Serene, at Night Calm, with a clear Sky, somewhat cold, the Mercury rising to $29\frac{18}{30}$.

♀. 14th. A fine temperate Morning, with some small Rain like Dew, and a moderate Gale at *South west*, the Mercury at $29\frac{18}{30}$. The Afternoon a little overcast, and the Horizon somewhat Hazy, a small Gale at *South-east*, the Mercury falling to $29\frac{18}{30}$. At Night Temperate and Calm, the Mercury rising to $29\frac{14}{30}$.

u. 15th. A fine temperate calm Morning, the Mercury at $29\frac{15}{30}$. At Noon fair, pleasant, calm Weather, the Mercury fallen to $29\frac{12}{30}$. All the Afternoon, and at Night a fresh Gale at *North-east* fair Weather, the Mercury rising to $29\frac{15}{30}$.

♀. 16th. A gray cloudy Morning, somewhat Hazy, with a fresh Gale at *North-east*, the Mercury at $29\frac{17}{30}$. At Noon fair and clear, the Gale moderate, and the Mercury falling almost to $29\frac{14}{30}$. The Afternoon somewhat Cloudy with a fine Gale at North East; At Night a little Wind, serene and sharp, the Mercury rising to $29\frac{18}{30}$.

h. 17th. A Gray Morning somewhat cold with a fine Gale at North East, the Mercury at $29\frac{17}{30}$, and at Noon falling to $29\frac{15}{30}$. At Night little Wind, the Mercury rising to $29\frac{16}{30}$.

©. 18th. A fair temperate calm Morning somewhat foggy, the Mercury at $29\frac{17}{30}$. All Day fair Weather somewhat Cloudy with small Winds at North East, the Mercury falling to $29\frac{15}{30}$. At Night blowing fresh, the Mercury rising to $29\frac{18}{30}$.

D. 19. A Gray cloudy Morning with a fresh Gale at North East, the Mercury at $29\frac{18}{30}$. Close Thick Weather, with continual Rain all Day and Night, and a moderate Gale at North East; at Night the Mercury rising to $29\frac{19}{30}$.

z. 20th. Close thick Rainy Weather, the Morning with a moderate Gale at North East, the Mercury falling below $29\frac{18}{30}$. And by Noon to $29\frac{16}{30}$, continual thick rainy Weather all Day and Night, the Mercury at $29\frac{16}{30}$, and the Gale as before.

♀. 21st. A gray cloudy Morning but fair and beginning to clear up and Calm withal, the Mercury at $29\frac{15}{30}$. at Noon fair Weather, and somewhat clear, with a small Gale at *South-west*, the Mercury falling to $29\frac{15}{30}$. At Night calm and somewhat cloudy, the Mercury at $29\frac{14}{30}$.

4. 22d. A gray cloudy Morning continuing so all Day with a small Gale at *North-East*, the Mercury at $29\frac{15}{32}$, at Night rising to $29\frac{15}{32}$.

8. 23d. A gray cloudy Morning, continuing so all Day, with small Gales at *North-East*, the Mercury at $29\frac{14}{32}$, at Night more serene the Mercury rising to $29\frac{15}{32}$.

h. 24th. A gray Morning and calm Weather, the Mercury at $29\frac{15}{32}$, close and cloudy Weather all Day and no Wind, the Mercury falling to $29\frac{15}{32}$. At Night rising almost to $29\frac{15}{32}$.

o. 25th. A gray cloudy Morning, (some Rain before Day light) with small *Southerly* Brizes, the Mercury at $29\frac{15}{32}$. Towards Sun-shining and pleasant, little Wind variable, the Mercury falling to $29\frac{15}{32}$. The Afternoon and at Night overcast and cloudy, the Wind at *South by East*, and the Mercury rising to $29\frac{15}{32}$.

6. 27th. A fine pleasant Morning, with a hazy Horizon, and altogether calm, the Mercury at $29\frac{15}{32}$, and by Noon at $29\frac{15}{32}$. All Day pleasant Weather, and at Night small Gales at *North-East* the Mercury rising to $29\frac{15}{32}$.

7. 28th. A fine pleasant Morning with a small Brize at East North East, the Horizon somewhat hazy and the Mercury at $29\frac{15}{32}$. at Noon falling to $29\frac{15}{32}$. All Day fair and pleasant Weather with the foresaid Brize. At Night calm, the Mercury falling almost to 29° .

8. 29th. A gray Morning, with a close Horizon, and a small Brize about East-North-East, the Mercury at $29\frac{2}{32}$. Calm all the Forenoon, in the Afternoon pleasant Weather, with a small Gale of South-East, the Mercury at $29\frac{6}{32}$. At Night calm, the Mercury at $29\frac{7}{32}$.

4. 30th. A gray cloudy Morning, and close Weather, with a fresh Gale at South-East, the Mercury at $29\frac{15}{32}$.

All Day cloudy and dark, the Gale freshning and veering to *East-North-East*, the Mercury rising to $29^{\frac{11}{16}}$.

☾. 31st. Gray cloudy Weather all Day, with a fresh Gale at *North-East*; in the Evening some Rain blowing fresh all Night.

JANUARY.

☉. 1st. Variable Weather with small Gales at *North-East*.

☾. 2d. Rainy thick Weather all Day and Night with little Wind at *North-East*.

♁. 3d. Continual thick rainy Weather all Day and Night, the Wind at *North-East*.

♃. 4th. Fair Weather somewhat close, and calm all Day and Night.

♄. 5th. Close Weather with some Rain and Calm this Forenoon; and in the Afternoon a small Brize at *west-North-west*. Departed from Emüy.

V. *Part of a Letter from Dr. David Gregory, to Dr. Sloane, dated Oxford, October 12. 1699. containing his observations of the Eclipse of the Sun on the 13th of September last.*

I Send you a Scheme of the Phases of the late Eclipse of the Sun, (*see the Table*) as I observ'd them. I did not see the beginning of it: But the end happened here, precisely Twenty four Minutes and Nine seconds after Ten a Clock in the Morning, apparent Time, and all the Times marked in the Figure are such: The greatest Observation, which was Ten Digits and a Quarter, was about Seven Minutes after