

II. *Part of two Letters from Mr Stephen Gray, concerning the Spots of the Sun, observ'd by him in June last.*

S I R.

Spots in the Sun being so rarely seen, I presume it may not be unacceptable to you or some others of the Royal Society to hear of one that has been observed by me this present *June*, tho' it have at this time left the Sun's visible Disk, yet by the sequel of this account, you will find it may probably return in a few days.

*June* the 15th, 1703. between 4 and 5 a Clock in the Afternoon I saw a Spot in the Sun, by placing a white Paper so far behind the Telescope of 6 Foot, as to give the image of the Sun 9 inches diameter; the Spot was in the lower Right hand Quadrant of the Sun's Disk, its form was almost round, inclining to an Ellipsis, it was distant from the limb of the Sun about 6 or 7 minutes, and its diameter I judg'd to be about 10 or 12 Seconds, a little before the Sun set I saw the Spot with a 16 Foot Telescope, and could perceive that it was environ'd with a Mistiness; the 16th I saw the Spot again about 2 in the Afternoon, and found it advanced nearer to the Western limb of the Sun, but the 17th was Cloudy, and so was the Night, which hinder'd me from observing the Eclipse of the Moon; the 18th in the Afternoon it clear'd up, and a little before 5 I saw the Spot with the 16 Foot Glass through thin Clouds, and found it was now very near the limb of the Sun, little more than half a minute, 'twas much contracted in its breadth, so as to be 4 or 5 times longer than broad, the 19th in the Morning I look'd for it again, but could not see it, so I concluded it was then either gone off the Disk of the Sun,

or

or if it adhered to the limb, the great Tremulation of the Atmosphere hinder'd me from seeing it.

Astronomers have by these Spots found, that the Sun revolves on its Axis, so as that in 27 days the same point in the Suns Disk returns to the same place seen from the Earth, hence its Semirevolution in  $13\frac{1}{2}$  days, and consequently the Spot going off the Suns Disk, the 19th of *June* may be expected to return the 2d of *July* next to the Eastern limb of the Suns visible Hemisphere, if it be not dissolved before that time. I have in the following Figure endeavoured to express the appearance, but had not the conveniency of measuring the angle of the Spots way, with the Vertical, which is only guess'd at.

*June* the 26, 1703. In the Evening I look'd to see whether there were generated any new Spots in the Sun, but found none; but on the 27th about half an hour after 8 in the Morning, by receiving the Suns image on white Paper from the 6 Foot Glass, I saw a Spot near the Vertical of the Sun towards the lower limb, betwixt 9 and 10 I elevated the 16 Foot Tube, the Clouds now being of a convenient thickness to let me see the Sun without prejudice to my Eyes, and found that this Spot was of atriangular form, and that it was accompanied with 2 other lesser ones, as is express'd in Figure the 1st, the sides of the great Spot were curvilinear, this with 2 lesser ones made an Equicrural Triangle at 4 in the Afternoon the Triangular Spot had a small fragment separated from it, and it self was now become Elliptical, the Spot b. d. was much augmented, but the Spot c. diminished, and become longish, as in Figure 2, at half an hour after 5 the fragment from the great Spot was it self divided into 2, and the Spot c. was so narrow as scarce to be seen, as at Fig. 3, at 6 a Clock, and 30 minutes there was a small fragment separated from the lower end of the great Spot, as at Figure 4, at 7 a Clock the Spot b was much encreas'd, but c. was vanish'd; the observations made this Afternoon with the 16 Foot Glass, were when the Air was clear and so to secure my Eye, the Eye Glass was smok'd with a Wax Candle. The

The 28th about 7 in the Morning, I saw that the great Spct was much augmented, but the lesser ones that yesterday attended it, were vanish'd, and that there were two new ones generated at about  $1\frac{1}{2}$  minutes distance from the great one below, and towards the left hand of it the great one was a paralellogram, with a very black diagonal crossing it, see Fig. 5. at 10 a Clock there was another diagonal crossing the former, and the two lesser Spots which before were longish, had now taken a round form, the Spot c. being much larger than the other at b.

I am not yet furnish'd with proper Instruments to find the position of the Suns Spots, with respect to Longitude and Latitude on the Suns Disk, so I contented my self with observing the position and variation of the Spots among themselves, which afforded me a most strange and wonderful variety.

### III. *Some Observations on the Spots of the Sun, by the reverend Mr William Derham, F. R. S.*

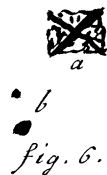
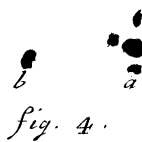
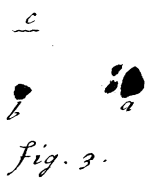
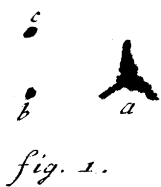
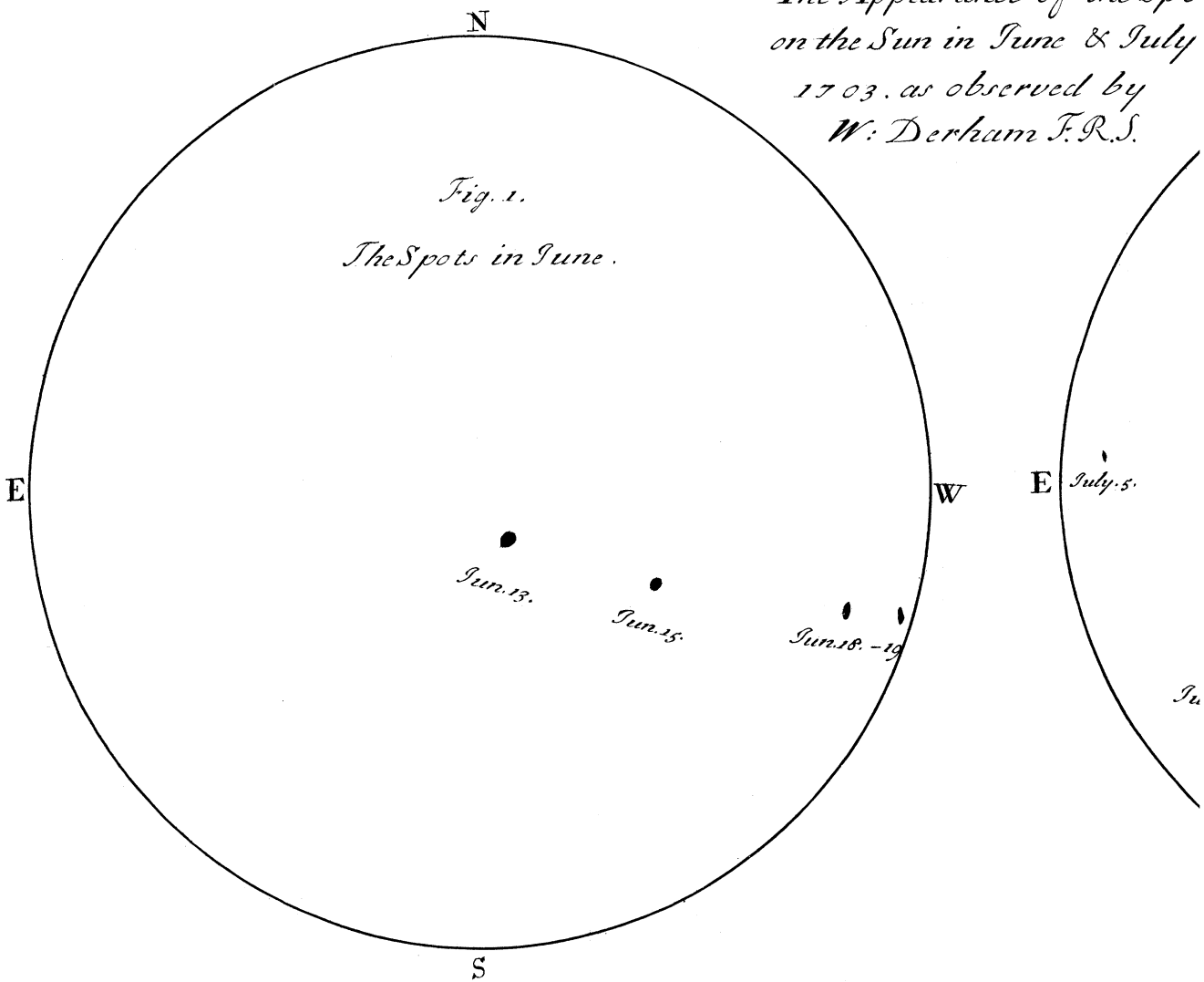
#### Explication of the Figures.

**T**He two Circles represent the Suns Disk, and N. the Northern part thereof, S. the Southern, E. the Eastern, and W. the Western part.

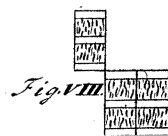
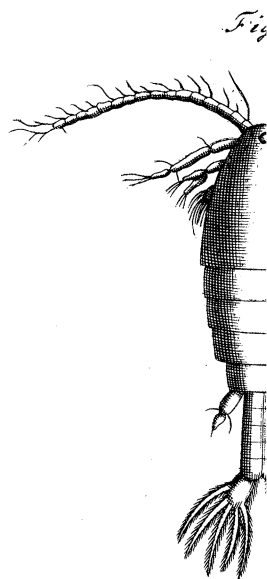
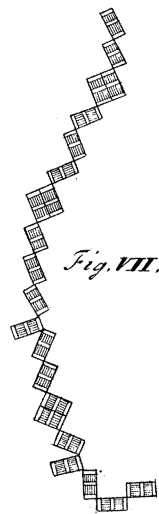
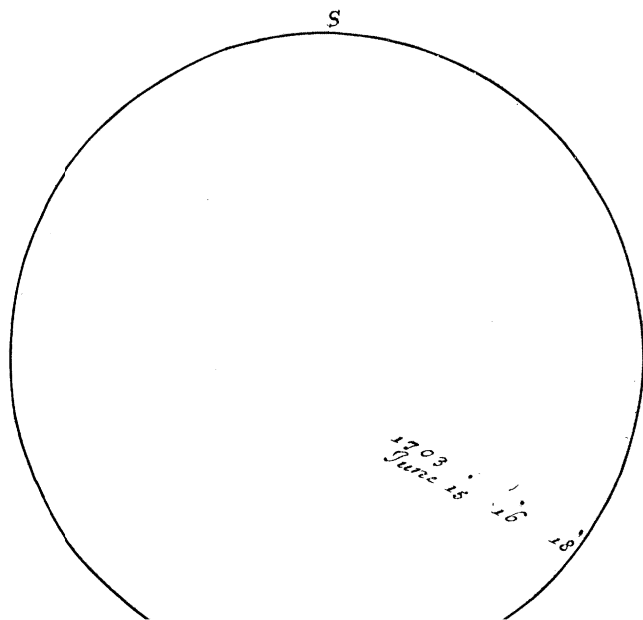
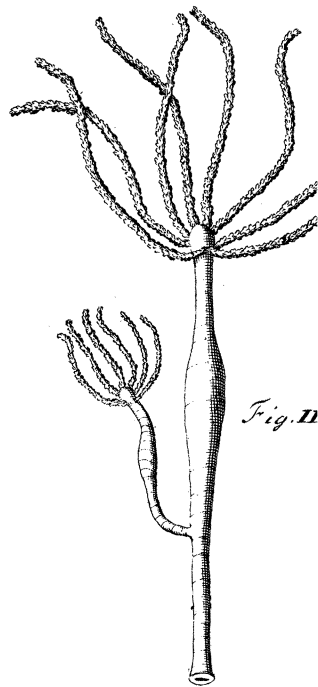
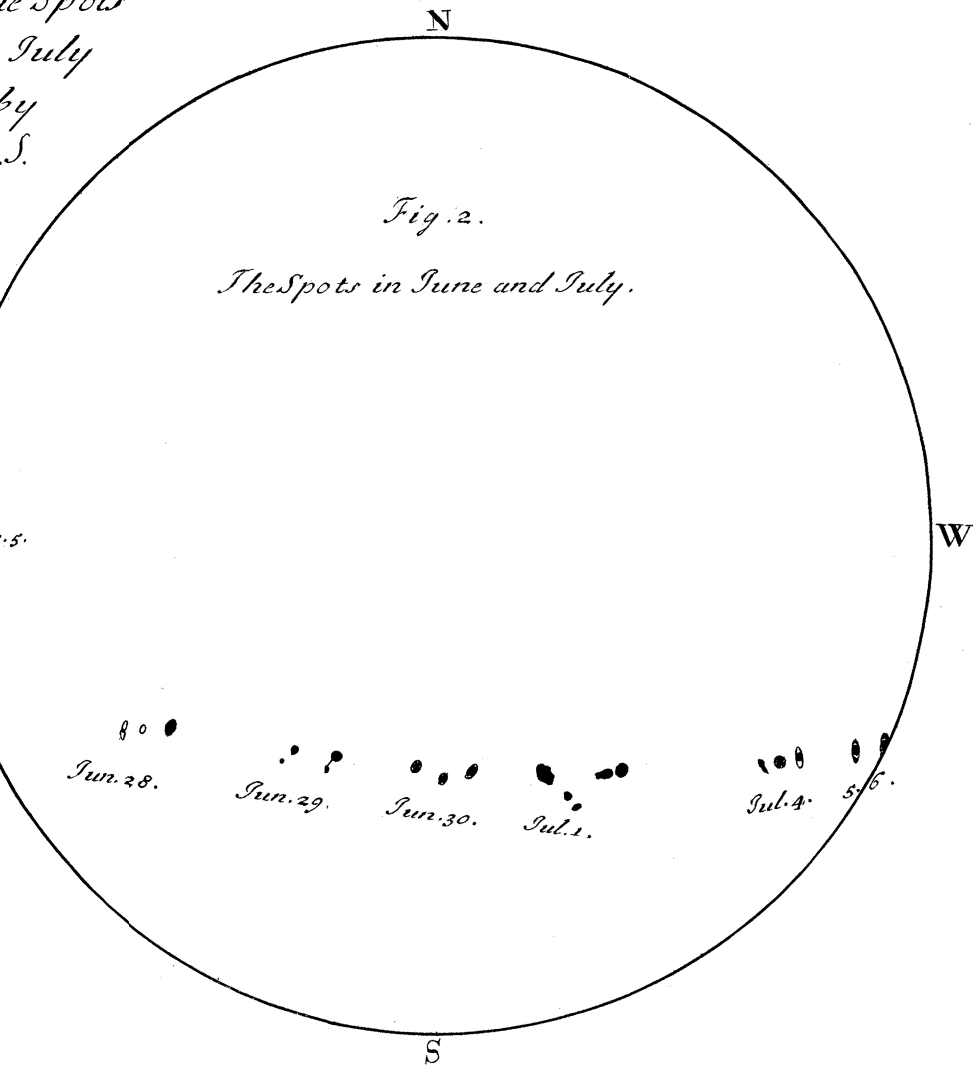
The place of the Spots, and the manner of their Appearance every day, is represented with the day of the Month on the Sun's Disk.

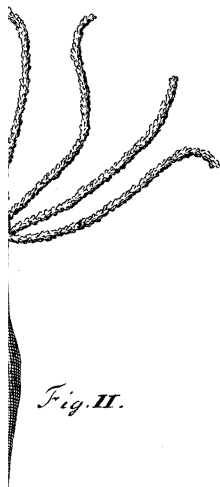
But I desire it may be observed, that altho the Figures of the Spots are done pretty exactly, yet their places on the Sun are not so, for being unprovided with convenient Instru-

*The Appearance of the Spots  
on the Sun in June & July  
1703. as observed by  
W: Derham F.R.S.*



the Spots  
July  
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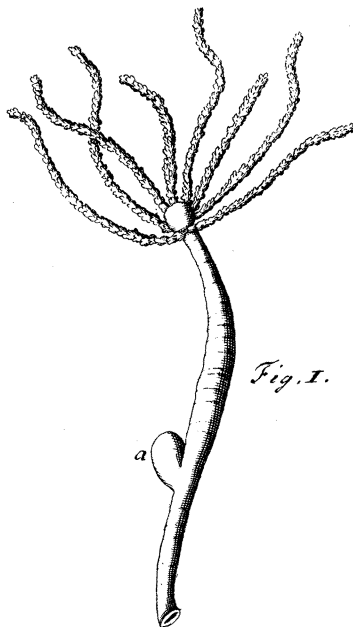
*Fig. II.*



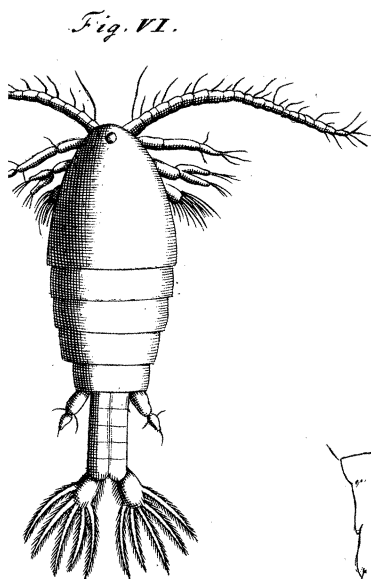
*Fig. III.*



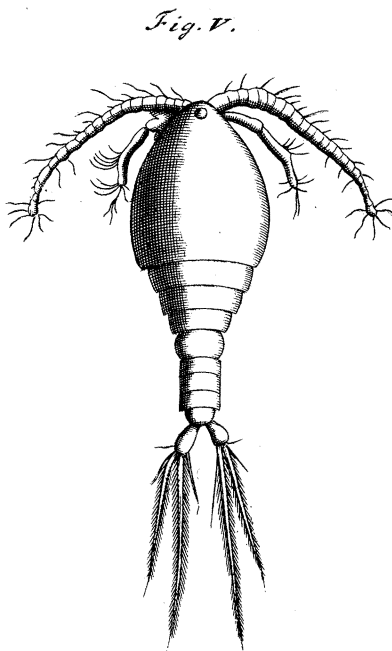
*Fig. IV.*



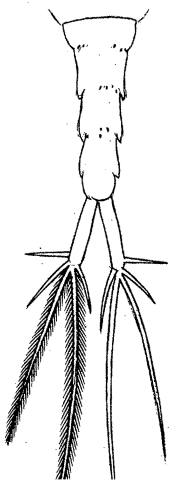
*Fig. I.*

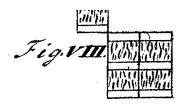
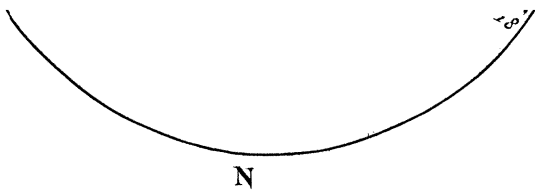


*Fig. VI.*



*Fig. V.*









The Appearance of the Spots on the Sun in June & July 1703. as observed by W: Derham F.R.S.

