

of that theory had endeavored to account for this, by supposing that the rays of the sun passed freely through the body of the planet; and Galileo takes occasion to praise him for not being deterred from adopting the system which, on the whole, appeared to agree best with the phenomena, by meeting with some appearances which it did not enable him to explain.<sup>11</sup> Yet while the fate of the theory was yet undecided, this could not but be looked upon as a weak point in its defences.

The objection, in another form also, was embarrassing alike to the Ptolemaic and Copernican systems. Why, it was asked, did not Venus appear four times as large when nearest to the earth, as when furthest from it? The author of the Epistle prefixed to Copernicus's work had taken refuge in this argument from the danger of being supposed to believe in the reality of the system; and Bruno had attempted to answer it by saying, that luminous bodies were not governed by the same laws of perspective as opaque ones. But a more satisfactory answer now readily offered itself. Venus does not appear four times as large when she is four times as near, because her *bright part* is *not* four times as large, though her visible diameter is; and as she is too small for us to see her shape with the naked eye, we judge of her size only by the quantity of light.

The other great discoveries made in the heavens by means of telescopes, as that of Saturn's ring and his satellites, the spots in the sun, and others, belong to the further progress of astronomy. But we may here observe, that this doctrine of the motion of Mercury and Venus about the sun was further confirmed by Kepler's observation of the transit of the former planet over the sun in 1631. Our countryman Horrox was the first person who, in 1639, had the satisfaction of seeing a transit of Venus.

These events are a remarkable instance of the way in which a discovery in art (for at this period, the making of telescopes must be mainly so considered) may influence the progress of science. We shall soon have to notice a still more remarkable example of the way in which two sciences (Astronomy and Mechanics) may influence and promote the progress of each other.

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<sup>11</sup> Drinkwater-Bethune, *Life of Galileo*, p. 85.