

which we see in swimming, &c.) And I have never found it lower than in high Winds. *

I have divers times, upon discerning my Quicksilver to fall without any visible cause at home, looked abroad and found (by the appearance of broken Clouds, or otherwise) that it had rained not far off, though not with us: Whereupon, the Air being then lightened, our heavier Air (where it rained not) may have, in part, discharged it self on that lighter.

*The Author of these Observations intends hereafter more particularly to observe, from what points those Winds blow, that make the Quicksilver thus subside.

A more particular Account of those Observations about Jupiter, that were mentioned in Numb. 8.

Since the publishing of *Numb. 8.* of these *Transactions*, where, among other particulars, some short Observations were set down touching both the *shadow* of one of *Jupiter's* *Satellites*, passing over his Body, and that *Permanent Spot*, which manifests the Conversion of that Planet about his own *Axis*; there is come to hand an *Extract* of that Letter, which was written from *Rome*, about those Discoveries, containing an ample and particular Relation of them, as they were made by the Learned *Cassini*, Professor of *Astronomy* in the University of *Bononia*. That *Extract*, as it is found in the *French Journal des Scavans* of *Febr. 22. 1666.* we thus *English*.

Monsieur Cassini, after he had discovered (by the means of those Excellent Glasses of *50. palmes*, or *35. feet*, made by *M. Campani*) the *shadows*, cast by the *4 Moons* or *Satellites* of *Jupiter* upon his Diske, when they happen to be between the Sun and Him; after he had also distinguished their Bodies upon the Diske of *Jupiter*; made the last year some *Prædictions* for the Months of *August* and *September*, noting the dayes and hours, when the Bodies of the said *satellites* and their *Shadows* should appear upon *Jupiter*, to the end that the Curious might be convinced of this matter by their own Observations.

Some of these *Prædictions* have been verified not only at *Rome*, and in other places of *Italy*, but also at *Paris* by *M. Auxout*, the most Celebrated and the most Exact of our *Astronomers*; and in *Holland*, by *M. Hugen*s. And we can now doubt no longer, of the rotation of the *Satellites* about *Jupiter*, as the Moon turns about the Earth; nor believe, that *Jupiter* or his *Attendants* have any other Light, than that, which they receive from the Sun; as some did a-

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sure before these Observations. There remained to find by Experience, whether *Jupiter* did turn about his *Axis*, as many believe, that the *Earth* turns about her's. And although most *Astronomers* had conjectur'd, it did so, either by this Analogy, or by other Congruities, yet it was much wish'd, that we might be assured thereof by Observations. And this it is, for which we are obliged to *M. Cassini*, who, having by the advantage of the same Glasses discover'd several changes, as well in the three obscure *Belts*, commonly seen in *Jupiter*, as in the rest of his *Diske*, and having also observed Spots in the midst of that *Planet*, and sometimes *Brightnesses*, such as have bin formerly seen in the *Sun*, hath at length discover'd a *Permanent Spot* in the *Northern* part of the most *Southern Belt*; by the means whereof, he hath concluded, that *Jupiter* turns about his *Axis* in 9. dayes, 56. minutes, and makes 29. whole circumvolutions in 12. dayes 4. minutes of ours, and 360. in 149. dayes. For he has found, that this *Spot* was not caused by the Shadow of any *Satellit*, as well by reason of its Situation, as because it appeared, when there could be no Shadow. Besides, that its motion differed from that of the Shadows, which is almost equal, as well towards the Edges as towards the Middle of *Jupiter*: Whereas, on the contrary, this *Spot* hath all the accidents, that must happen to a thing, which is upon the surface of a round Body moving; for example, to move much more slowly towards the Edges, than towards the Middle, and to pass over that part, which is in the middle of the *Diske*, equal to the half of the *Diameter*, in the sixth part of the time, it takes to make the whole revolution: he having seen this half pass'd over, in 99 or 100 minutes just, as it must happen, supposing the whole circumrotation is made in 9. hours 56. minutes.

He hath not yet been able to determine the Situation of the *Axis*, upon which this motion is made, because the *Belts*, according to which it is made, have for some years appeared streight, though in the precedent years, other *Astronomers* have seen them a little crooked: Which sheweth, that the *Axis* of the diurnal motion of *Jupiter* is a little inclined to the plain of the *Ecliptick*. But in time we may discover, what certainty there is in this matter.

After this excellent Discovery, he hath calculated many *Tables*, whereof he gives the Explication and Use in the Letters by him addressed to the Abbot *Falconieri*. By the means of them, one may know, when this *Spot* may be seen by us: For, having first considered

These Tables are not yet sent over, but, 'tis hoped, will be, ere long.

sidered it in relation to the *Sun*, in respect whereof, its motion is regular, he considers the same in relation to the *Earth*, where *We* observe it; and shews by the means of his *Tables*, what is to be added or subtracted, to know, at what time the said *Spot* is to come into the middle of *Jupiter's* Diske, according as he is Oriental or Occidental. He hath also considered it in relation to an unmovable point, which he has supposed to be the first point of *Aries*, because we thither refer here upon *Earth* the beginning of all the Celestial motions, and *there* is the *Primum mobile*, that one would imagine, if we were in *Jupiter*, as we do here imagine Ours of 24. hours.

The Discovery is one of the best, that have been yet made in the Heavens; and those, that hold the Motion of the earth, find in it a full Analogy. For, *Jupiter* turning about the *Sun*, does nevertheless turn about his *Axis*; and although he be much bigger than the *Earth*, he does nevertheless turn much more swiftly than it, since he makes more than two Turns, and a third part, for its one; and carries with him 4. Moons, as the *Earth* does one.

This Observation ought to excite all Curious persons to endeavour the perfecting of *Optick* *Classes*, to the end that it may be discovered, whether the other *Planets*, as *Mars*, *Venus* and *Mercury*, about whom no Moon hath as yet been discovered, do yet turn about their *Axes*, and in how much time they do so; especially *Mars*, in whom some *Spot* is discover'd, and *Venus*, wherein *M. Burattini* hath signified from *Poland*, he has observ'd Inequalities, as in the Moon.

It will be worth while, to watch for the seeing of *Jupiter* again this Spring, that this happy Observation may be confirmed in divers places, and endeavours used to make new ones.

An Account of some Books, lately published.

I. *Hydrostatical Paradoxes, made out by New Experiments (for the most part Physical, and Easie) by the Honourable Robert Boyle.* This Treatise, promised in *Numb. 8.* of these Papers, is now come forth: And was occasioned by the perusal of the Learned *Monfieur Paschalls* Tract, *Of the Æquilibrium of Liquors*, and of the *Weight of the Air*: Of which two Subjects, the latter having been more clearly made out in *England* by Experiments, which could not be made by *Monfieur Paschal* and others, that wanted the advantage of such Engines and Instruments, as have here been frequently made use