

PHILOSOPHICAL
TRANSACTIONS:

The Motion of the Late Comet Praedicted

Phil. Trans. 1665-1666 1, doi: 10.1098/rstl.1665.0004, published online
1 January 1665

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The *Third*, respects *Jupiter*, wherein *Campani* affirms he hath observed by the goodnes of his Glasses, certain *protuberancies* and *inequalities*, much greater than those that have been seen therein hitherto. He addeth, that he is now observing, whether those sallies in the said *Planet* do not change their scituation, which if they should be found to do, he judgeth, that *Jupiter* might then be said to turn upon his *Axes* which, in his opinion, would serve much to confirm the opinion of *Copernicus*. Besides this, he affirms, he hath remarked in the *Belts* of *Jupiter*, the shaddows of his *satellites*, and followed them, and at length seen them emerge out of his Disk.

A Spot in one of the Belts of Jupiter.

The Ingenious Mr. *Hook* did, some moneths since, intimate to a friend of his, that he had, with an excellent twelve foot Telescope, observed, some days before, he than spoke of it, (*videl.* on the ninth of *May*, 1664. about 9 of the clock at night) a small Spot in the biggest of the 3 obscurer *Belts* of *Jupiter*, and that, observing it from time to time, he found, that within 2 hours after, the said Spot had moved from East to West, about half the length of the Diameter of *Jupiter*.

The Motion of the late Comet prædicted.

Evidence that comets follow regular paths

There was lately sent to one of the *Secretaries* of the *Royal Society* a Packet, containing some Copies of a Printed Paper, Entituled, The *Ephemerides* of the *Comet*, made by the same Person, that sent it, called *Monsieur Auxout*, a *French Gentleman* of no ordinary Merit and Learning, who desired, that a couple of them might be recommended to the said *Society*, and one to their *President*, and another to his Highness *Prince Rupert*, and the rest to some other Persons, nominated by him in a Letter that accompanied this present, and known abroad for their singular abilities and knowledge in Philosophical Matters. The end of the Communication of this Paper was, That, the motion of the *Comet*, that hath lately appeared, having been prædicted by the said *Monsieur Auxout*

zout, after he had seen it (as himself affirms) but 4 or 5 times: the *Virtuosi* of *England*, among others, might compare also their Observations with his *Ephemerides*; either to confirm the *Hypothesis*, upon which the *Author* had before hand calculated the way of this Star, or to undeceive him, if he be in a mistake. The said *Author* Dedicateth these his conceptions to the most Christian King, telling him, that he presents Him with a design, which never yet was undertaken by any *Astronomer*, all the World having been hitherto perswaded, that the motions of *Comets* were so irregular, that they could not be reduced to any Laws, and men having contented themselves, to observe exactly the places, through which they did pass; but no man, that he knows, having been so bold as to venture to foretel the places, through which they should pass, and where they should cease to appear: Whereas he exhibites here the *Ephemerides*, determining day by day, in what place of the Heavens this *Comet* shall be, at what hour it shall be in its *Meridian*, and at what hour it shall set; untill its too great remoteness, or the approach of the Sun, hide it from our eyes. Descending to particulars, he saith, that this Star, being disengaged from the beams of the Sun might have been observed, if his conjectures be good, ever since it hath been of 17 or 18 degrees *Southern Latitude*, and that about the middle of *November* last, and sooner, unless it have been too small: That however it hath been seen in *Holland* ever since the 2d. of *December* last, at which time, according to his reckoning, the Diurnal motion of the *Comet* should already amount to 17 or 18 minutes. He finds, that this Star moveth just enough in the Plan of a *Great Circle*, which inclineth to the *Equinoctial* about 30 degrees, and to the *Ecliptick* about 49d. or 49½ cutting the *Equator* at about 45d ½, and the *Ecliptick* at the 28d. of *Aries*, or a little more. He saith just enough, because he thinks, there may perhaps be some *parallaxe*, which he wisheth could be determined.

Hence, (so he goes on) every one who pleaseth, may see, in tracing the *Comet* upon the *Globe*, through, or by which Stars it hath passed and shall pass; adding, that there will be neither cause to wonder, that having descended to about 6. deg. beneath the *Tropick* of *Capricorn*, he hath remounted afterwards, and shall go

on

on ascending so, as to pass the *Æquinoctial*, and perhaps proceed to 15. degrees *Northern Declination*, if it do not disappear before that time, by reason of its remoteness: Nor to believe, that there have been two *Comets*, upon its being seen again the 31. of *December*; since, according to him, it ought to have been so, if it continue to move in a *Great Circle*.

Having hereupon shewed, how the motion is to be traced upon the *Globe*, he finds, that, according to his Calculation, this *Comet* was to pass the *Tropick* of *Capricorn* about the 16 of *December*, and being entred into the Sign of *Virgo* on the 20. of the same month, and having been in *Quadrat* with the *Sun*, it should still descend, until the 26 of *December* in the morning, and then enter into *Leo*; that having entred, the 28. of the same month, into *Cancer*, and been, a little after that time, in its greatest Inclination to the *Ecliptick*, vid. in the 28. degree of *Leo*, it was to repass the *Southern Tropick*, over against the *little Dogg*, on the 29. of *December* about 9 or 10. of the clock in the morning; after it had been opposite to the *Sun* 2. or 3. hours before; and that on the 29. of *December* in the evening it should be in *Gemini*; and at the very beginning of the New year, enter into *Taurus*.

After this, our Author finds, that this *Comet*, according to his account, should pass the *Æquator*, on the 4. of *January* before noon, and that about 5. or 6. of the clock in the evening of that day it was to come into the jaw of the *Whale*, and the 9. of the same, at 6. of the clock, it should come close to the small Star of the *Whale*, which is in its way, a little below. At length he finds that it was to enter into *Aries* on the 12. of *January*, and to cut the *Ecliptick* on the 16. of the same month about noon, at which time it was to be again in *Quadrat* with the *Sun*, whence drawing a little to above the *Northern Line* of *Pisces*, it should in his opinion cease to appear a little beyond that place, without going as far as to the middle of *Aries*, if so be that its remoteness make it not disappear sooner.

He continueth, and saith, that this *Comet* shall not arrive to the place over against the *Line* of *Pisces* till the 10 of *February*, & that then its *Diurnal* motion shall not exceed 8 minutes, and not 5 minutes about the 20 of the same month: and that in the be-

ginning

ginning of *March*, if we see it so long, the said motion shall not exceed 4 minutes, and so shall be still diminishing; except the *Comet* become *Retrograde*, which, as very important, he would have well observed; as also, whether its motion will be about the end more or less swift, than he hath calculated it.

He subjoyneth, that the greatest way, which this Star could make in 24. hours, hath been 13.*d.* 25'; and in one houre, about 34's and thinking it probable, that about the time, when it made so much way, it should be nearest to the *Earth*, he concludeth that its motion in 24. hours must be, in its least distance from the *Earth*, as about 3. to 14, or 1. to 4 $\frac{2}{3}$, and that its motion in one hour was to be to the same least distance, as about 1. to 102 $\frac{1}{2}$.

But that, which he judgeth most reworkable, is, that he found by his Calculation, that the said least distance should be on the 29. of *December*, when the *Comet* was opposite to the *Sun*s which he does not know whether it may not serve to decide the grand Question concerning the *Motion of the Earth*. ←

He taketh further notice, that the *Tayl* of the *Comet* was to turn *Westward*, with a point to the *North*, until the 29. of *December*, at which time it was to be opposite to the *Sun*, and that then the said *Tayl* was to look directly *North*; but that, after that time, the *Tayl* was to turn *Eastward*, and continue to do so, until it disappear; and that it shall draw a little towards the *North*, until the 8. or 10. of *February*, at which time the *Tayl* is to be parallel to the *Æquator*, as if the *Comet* be yet seen for some time after, the *Tayl* shall go a little lower towards the *South*, but grow smaller.

He finds by his *Hypothesis*, that on the 2. of *December*, which is the first observation, that he hath heard of, this Star was to be about 7. times more remote from the *Earth*, than when it was in its *Perigeum*; and that it will be again in an equall remoteness from the *Earth*, on the 27. of *January*, so that he is of opinion, that in case this *Comet* have not been seen before the 2. of *December*, it will not be seen any more after the 27. of *January*.

He wishes above all things, that it might be very exactly observed, at what Angle the way of the *Comet* cuts the *Æquator*, and, most of all, the *Ecliptick*, that so it may be seen, whether there

there hath not been some *Parallaxe* in the *Circle* of his Motion; as also, that some observations could be had of its greatest descent beneath the *Tropick of Capricorn* in the more *Southern* parts, where he saith it would have been without *Refractions*; Moreover of the Time, when it hath been in *Quadrat* with the *Sun* about the 20 of *December*; and that also very exact Observation might be made of the time of its being again in *Quadrat* with the *Sun*, which, according to him, was to be *January* 16.

He wishes also, that some in *Madagascar* may have observed this Star; Seeing that it began to appear over the middle of that *Island*, and passed twice over their heads; he judgeth, that they have seen it before us. And he wisheth lastly, that there were some intelligent person in *Guiana* to observe it there, seeing that within a few daies, according to his reckoning, it will pass over their Heads, and will not remove from thence but 8 or 10 degrees Northward; where he saith, it will disappear; thinking it improbable, that it can still appear, after the *Sun* shall have passed it.

This Account beareth date of the 2. *January*, new stile, 1665. and the Author thereof addeth this Note, That, seeing it could not be printed nor distributed so soon as he desired, he hath had the opportunity to verifie it by some Observations, from which he affirms he hath found no sensible difference; or, if there be, that it proceeds only from thence, that the Stars have advanced, since his *Globe* was made. He concludeth, that if this continue, and the first Observations do likewise agree, or that the differences do arrive within the Times, ghesed by him, that he hopes, he shall determine both the *Distance* and the *Magnitude* of this *Comet*; and that perhaps one may be enabled to decide the Question of the *Motion of the Earth*. In the interim, he assureth, that he hath not changed the least number in his Calculations, and that *Monsieur Huygens*, and several French Gentlemen, to whom he saith, he hath given them long since, can bear him witness that he hath done so; as also many other friends of his, who saw upon his *Globe*, several daies before, the way of the *Comet* from day to day.

Thus for the *Parisian* Account of the *Comet*, which is here inserted at large, that the intelligent and curious in *England* may compare

compare their Observations therewith, either to verifie these *Predictions*, or to shew wherein they differ; which is (as was also hinted above) the design of this *Philosophical Prophet* in dispersing his Conceptions, who declareth himself ready, in case he be mistaken in his reckoning, to learn another *Hypothesis*, to explicate these admirable appearances by.

An Experimental History of Cold.

There is in the Press, a New *Treatise*, entituled, *New Observations and Experiments in order to an Experimental History of Cold*, begun by that Noble Philosopher, Mr. *Robert Boyle*, and in great part already Printed; He did lately very obligingly present severall Copies of so much as was Printed, to the *Royal Society*, with a desire that some of the Members thereof might be engaged to peruse the Book, and select out of it for trial, the hints of such Experiments, as the *Author* there wisheth might be either yet made or prosecuted. The Heads thereof are,

1. Experiments touching Bodies capable of Freezing others.
2. Experiments and Observations touching Bodies Disposed to be Frozen.
3. Experiments touching Bodies, Indisposed to be Frozen.
4. Experiments and Observations touching the Degrees of Cold in severall Bodies.
5. Experiments touching the Tendency of Cold Upwards or Downwards.
6. Experiments and Observations touching the Preservation and Destruction of (Eggs, Apples, and other) Bodies by Cold.
7. Experiments touching the Expansion of Water and Aqueous Liquors by Freezing.
8. Experiments touching the Contraction of Liquors by Cold.
9. Experiments in Confort, touching the Bubbles, from which the Levity of Ice is supposed to proceed.
10. Experiments about the Measure of the Expansion and the Contraction of Liquors by Cold.
11. Experiments touching the Expansive Force of Freezing Water.
12. Experiments touching a New way of estimating the Expansive