

Thermometers, Barometers, Hygroscopes.

These Observations being thought very considerable as well as curious, 'tis hoped, that those who have conveniency, will give encouragement and assistance for the making of them; and withall oblige the publick by imparting, w^hat they shall have observed of this kind: The *Publisher* intending, that when ever such observations shall be communicated to him, he will give notice of it to the *publick*, and take care of the improvement thereof to the best use and advantage. A *Pattern* of the *Table*, proposed to be made for observing the *Tides*, is intended to be published the next opportunity, God permitting.

*An Account
Of several Books lately published.*

I. *Johannis Hevelii DESCRIPTIO COMETÆ, Anno Æræ Christianæ MDCLXV. exorti; unâ cum MANTISSA Prodromi Cometicæ, Observationes omnes prioris COMETÆ MDCLIV, ex iisque genuinum motum accuratè deductum, cum Notis & Animadversionibus, exhibens.*

This Book (as the Title it self intimates) undertakes two things. *First*, To give an Account of the *Second* of the two late Comets, which appeared, when the *other* was scarce extinct; Concerning which, the Author doth, from the Observations made by himself with a *Sextant* of 6 foot, and divided into *minutes* and *seconds*, assign *both* its true place (as well in respect of the *Ecliptick* as the *Æquator*) and its proper motion: Adding a fair Delineation of its Course, together with the genuine Representations of its *Head* and *Train*, in each day of its apparition; and subjoyning a General Description and Discourse of some of the more notable *Phænomena* thereof. It was first seen at *Dantzick* by the Watchmen, the 5th of *April* st. n. 1665. and then observed by the *Author*, from *April* 6. about 1½ of the Clock in the morning, till *April* 20. at 3. in the morning. During which time, it went with a reasonable velocity; making 46 deg. in its Orb, according to the Order of the *Signs*, moving from the *Breast* of *Pegasus*, towards the *Head* of *Andromeda*, and the *Left Horn* of *Aries*; having, as 'tis presumed, taken its rise from above *Sagittary*, and run through the *Breast* of *Antinous*, under *Aquila*, and the *Dolphin*, to the said *Pegasus*; and so on, as is already expressed.

The *Head* of it is in the Book described of a Colour like that of *Jupiter*, all along much brighter than that of the former Comet, though of a somewhat less magnitude; having in its middle onely *one* round, but very bright and big *Kernel* or *Speck*, resplendent like *Gold*, and encompassed with another more dilute and seemingly uniform matter: its *Tail* being at first, about 17 deg. and afterwards 20. and sometimes 25 deg. long, and divaricated towards the End.

Next, it is observed, that though this Star did afterwards slacken its pace, yet it retained the vividness of its Colour, both of the *Head* and *Train*; the *Head* especially, keeping at the time as well of the last observations, as of the first

first, the brightness of its single *kernel*, though the environing more dilute matter were then almost all lost; it being, according to the Author, more and more attenuated, and grown narrow, the nearer the Star approached to the Sun.

Thirdly, 'tis noted, That this *Comet* did very much digress from the *Hypothesis*, delivered by *M. ANZOUT*, in regard that, whereas according to that *Hypothesis*, this Star should not arrive to the *Ecliptick* till after the space of 3 months, it arrived there the 28 of *April*. And then, that its first Conjunction with the Sun hapned between the 19 and 20 of *April*, and the second, the last of *April*, not (as *M. ANZOUT*, would have it) the 15 of *May*. So that he concludes, that this *Comet* never came down to the *Pleiads* and the *Eye of TAURUS*, as the *Hypothesis* of *M. ANZOUT* requires, but that from *April 20*. it did immediately take its course towards the *Ecliptick*, deflecting every day more and more from the *Section* of a *Great Circle*, to the *Lucida* of *Aries*, arriving at the *Ecliptick* the last of *April*, about the 8th or 10th deg. of *TAURUS*; not in *July* about the 8th of *Gemini*, and the *Eye of TAURUS*.

Fourthly, He intimates, that if this *Comet* had appeared some few weeks sooner, it would have confronted the former *Comet*, being yet in its vigour and of a conspicuous bigness, in the same place, where that was, viz. the *Head of Aries*.

Fifthly, He observes, that this Star in progress of time became *Retrograde*, whence it came to pass, that in the Months of *June* and *July* it did not appear again before the Rising of the Sun, though the Sun left it far behind: whereas, if it had proceeded toward the *Eye of TAURUS*, it would have appeared again in the morning.

Sixthly, He maintains, that this *Comet* was not the same with the former; which he thinks may be demonstrated, onely by a due Delineation of both their Course upon the *Globe*; where he saith it to be evident, that the former could never come to the *Head of Pegasus*, as moving already in *February* in a straight Course about the *Head of Aries*: Besides, that the former went in the very beginning in a *Retrograde* motion; but *this* perpetually in a direct one: that, about the end, very slow, its Head lessning and growing dark; *this* swift enough, with its head conspicuous and bright. To which he adds, that the whole Course of the former was made under a quite different *Angle* of the *Orbite* and *Ecliptick*, and a different Motion of the *Nodes* from the latter: As also that their *Faces* differed very much from one another; the *first* exhibiting all along a matter, which as to its density and rarity, altered from day to day exceedingly, whereas the *second* retained (to the Authors admiration, who affirms, never to have observed the like) all the time he saw it, one and the same round, dense and bright Speck or Kernel.

All which he concludes, 1, With an Intimation of his sense concerning two other *Comets*, pretended to have been lately seen, *One* at *Rome*, about the
Girdle

Girdle of Andromeda, in the Months of *February* and *March*, 1664. the other in *Germany* in *Capricorne*, about *Saturne* in the head of *Sagittary*, during the Months of *September* and *October*, 1665. 2ly. With an Advertisement of what he has done in that important Work for the Advancement of *Astronomy*, the due *Refutation of the Fixt Stars*, *vid.* That he has almost finish'd it, himself alone, without trusting to any other mans labour, that was not directed by him.

The *Second Part* of this Book (the *Mantissa* to the *Prodromus Cometicus*) endeavours to justify the Authors Observations touching the former Comet, excepted against by *M. Auxont*, in several particulars; as 1. That it had not pass'd to the *First*, but *Second Star* in *Aries*, and had mov'd in quite another Line, than He had described. 2. That its *proper motion* about the end of *January* and the beginning of *February*, 1665. had not been rightly assign'd. 3. That the *Bignesse* of its *Diameter* had not been truly delivered; Nor 4. The *Faces* of its *Head* in due manner represented.

To all which the Author endeavors to answer: 1. By delivering all his Observations of that Comet, thereby to shew, what care and diligence he had us'd, particularly to make out, how great its *Diurnal motion* had been; in what proportion, and how far, it decreased, and where and in what degree it increased again: Which being, as he conceives, duly and exactly deduced, and demonstrated, he esteems it afterwards to be easie for every one, versed in these matters, certainly to collect and to judge, what way the Comet, after it became invisible to the naked Eye, and could be no longer observed with *Sextants* and *Quadrants*, had taken, and what Line it had described. 2, By subjecting all those Observations, with great diligence and labour, to a rigid *Calculus*, thereby to obtain, for every day, the *Longitudes*, *Latitudes*, *Right Ascensions*, *Declinations*, *Proper motion*, *Angle* of the *Ecliptick* and the *Aequator*, and the *Nodes* of that Comet; for the construction of an *Ephemerides* of its whole Motion. From all which he pretends to prove, that he has not erred in his Observation of *February* 18. nor been prepossess'd by any *Hypothesis*, nor deluded by any *Fixt Star*, as *M. Auxont* thinketh; but that near the *First Star* of *Aries* there then appear'd a *Phænomenon*, most like to that Comet, that was seen some dayes before, if compar'd with the Observations made thereof *Febr.* 12, 13, 14. Though he will not hitherto positively determine, whether that *Phænomenon*, which appear'd to him *February* 18. was

indeed that very Comet, which he saw with his naked Eye, and observed with his Geometrical Instruments, the said 12, 13, and 14. dayes of *February*; or whether it was another, and whether he had lost that Comet, which moved towards the *Second Star* in *Aries*: but leaves it to the Learned World, and particularly to the *Royal Society*, after they shall have well examined and considered all his Observations, and the *Calculus* raised therefrom, to judge of this, and the other particulars in controversie.

II. *Isaacus Vossius de NILI et ALIORUM FLU- MINUM ORIGINE.* It was *Numb. 14.* of these *Trans- actions*, that gave an account of the *Cause* of the *Inundation* of the *Nile*, as it was rendred by *Monsieur de la Chambre*: This is to give you another, not only of the *Inundation*, but also of the *Origine* of that, and of *other Rivers*, as it is delivered by *Monsieur Isaac Vossius*, who undertakes in this Book to shew;

1. That those *Subterraneous Channels*, through which several *Philosophers* teach, that the *Sea* discharges it self into the *Rivers*, are not only imaginary, but useles, in regard 'tis impossible for the water to rise from the *Subterraneous* places up to the *Mountains*, where commonly the *Sources* of *Rivers* are.

2. He explicates, why, if a Pipe be put into a *Bason* full of *Water*, the water is seen more raised in the *Pipe*, than in the *Bason*, and rises higher according as the *Pipe* is narrower; On the contrary, if the same *Pipe* be put into a *Bason* full of *Quicksilver*, the *Quicksilver* stayes lower in the *Pipe*, than in the *Bason*. The reason, which he renders hereof, is, That as the *Water* sticks easily to all it touches, it is sustain'd by the sides of the narrow *Pipe* wherein it is included: And indeed, if the *Pipe* be quite drawn out of the *Water*, the *Water* doth not all fall out, but so much of it remains, as the sides of the *Pipe* could sustaine: Whence it is, that the *Water* which is kept up by the *Walls* of the *Tube*, weighing no longer upon that which is in the *Bason*, is thrust upwards, and keeps it self raised above its *Levell*; but the *Quicksilver* not adhering so easily, as *Water*, to *Bodies* it touches, is not sustained by the sides of the *Tube*, and so mounts not above its *Levell*, but rather descends below it, because the *Pipe*, which is streight, hinders the endeavor that is in the *Mercury* to rise to its *Level*. He adds, that this *Observation* makes nothing for the *Explication* of the *Origine* of *Rivers*; because, though it be true, that the *Water*
by

by this means rises above its Levell, yet it does never run out at the top of the Pipe. Having said this, he answers to the other Arguments, commonly alledged to maintain this Opinion.

3. He pretends, that all Rivers proceed from a *Colluvies* or *Rendevous* of Rain-waters, and that, as the Water, that falls upon *Hills*, gathers more easily together, than that which falls in *Plaines*, therefore it is, that Rivers ordinarily take their Source from *Hills*. Thence also comes it (saies he) that there are more *Rivers*, than *Torrents*, in the *Temperate Zones*; and, on the contrary, more *Torrents*, than *Rivers*, in the *Torrid Zone*: For, as in hot Climats the Mountains are far higher, the Water, that descends from them with impetuosity, runs away in a little while, and formes such Collections of Water, as soon dry up; but in cold Climats, the Waters do not run away but slowly, and are renew'd and recruited by Rain, before they are quite dried up; because the Hills are there lower, and so the Bed of Rivers hath lesse declivity.

Having thus discoursed of *Rivers in General*, he treats of the *Nile in particular*; and there

1. Observes, That the Order of the Seasons of the Year is quite inverted under the *Torrid Zone*. For, whereas it should be then Summer, when the Sun is near; and Winter, when the Sun is farther off: Under the *Torrid Zone* 'tis never lesse hot, than when the Sun is nearest; nor more hot, than when the Sun is farthest off: So that to the people that live between the *Aequinoctial* and the *Tropicks*, Summer begins about *Christmasts*, and their Winter, about *St. Johns* day. The reason whereof is, (saith he) that when the Sun is directly over their Heads, it raises abundance of vapors, and draws them so high, that they are presently converted into Water by the coldness of the Air; whence it comes to passe, that then it rains continually, which does refresh the Air; but when the Sun is farther off, there falls no more rain, and so the Heat becomes insupportable.

2. He proves by many recent Relations, that the Sources of the *Nile* are on this side of the *Aequinoctial* in *Aethiopia*; of which he gives a very accurate *Mappe*, correcting many faults which *Geographers* are wont to commit in the Description of the Kingdom of the *Abyssins*, which they believe to be much greater than indeed it is.

3. This suppos'd, he easily gives an account, why the *Nile* yearly overflows about the end of *June*: For, as at that time there falls much rain in *Ethiopia*, it must needs be, that the *Nile*, whose source is in that Country, should then overflow, when those rains begin, and subside, when they cease.

There are besides, in this Book, two other *Traacts*, In the *first*, *M. Vossius* endeavours to maintain the Doctrine, he had deliver'd in his Book *De Lumine*, and to shew, that the *Soul* of Animals is nothing but *Fire*, that there are no invisible Atoms; nor so much as any Pores, even in the Skin of man. Here he treats also of *Refractions*, and alledges the Examples of several persons, who have then seen the Sun by the means of *Refraction*, when really He was under the *Horizon*.

In the *second*, He discourses of some points of the *Mechanicks*; and relates among other things, that the *Arrows* and *battering Rams* (*Aries*) of the *Antients* did as much execution, as our *Muskets* and *Canons*; and then, that the Vehemence of the percussio depends as much upon the Length of the percutient Body, as upon the velocity of the Motion. He adds, that the Length of a Canon ought not to exceed 13 foot, and that a greater length is not onely usefess, but hinders also the effect of the Gun, not because the Bullet is throwa out of the Gun, before all the powder is fired (as some believe;) but because the Bullet is then beaten back into the Gun by the Air, re-entring into it with impetuosity, when the flame is extinct.

III. LE DISCERNEMENT DU CORPS ET DE L'AME, par M. de Cordemoy.

This *French Treatise* (but very lately come to the *Publisher's* hands) examines the different Operations of the Soul and Body, and the Secret of their Union; pretending to discover to every one, what he is, and what is transacting within him. It consists of six Discourses.

1. In the *first*, the Author examines the Notions, we have in general of *Bodies* and *Matter*; of *Quantity*; of *Qualities*; of *Place*; of *Rest*; of *Motion*; of *Vacuity*; of *Forms*: to shew what is to be understood by these Terms, which cause all the perplexity that is in the ordinary *Physicks*. He begins with taking notice, that hitherto *Philosophers* have had no *distinct* notions of *Bodies* and *Matter*, from the want whereof he conceives, that almost all the Errors in Common *Physiology* have sprung.

sprung: To rectify which, he defines *Bodies* to be * *Ex-*
tended Substances, and *Matter* an *Aggregate of Bodies*. * *It sounds*
 Whence he infers, that *Bodies* are *Indivisible* and *hard, To say,*
Matter divisible; a *Body* being nothing but *one* and *An extended*
 the *same* substance, whose different extremities are in- *substance is*
 separable, because they are the extremities of one and the *indivisible.*
 same *Extension*; and, in a word, of *one* and the same
 Substance: but *Matter* being nothing but an Association or Collection
 of *Bodies*, 'tis evident, (*saieth he*) it must be divisible. This doctrine
 he so much insists upon, that he conceives, Nature cannot subsist, if
 a *Body* in the sense he takes it, be divisible; and that *Motion* and *Rest*
 cannot be explicated without it. As for *Quantity*, he makes that to
 be nothing but *More* or *Less* *Bodies*; not allowing, that each *Body*
 should be a *Quantity*, though it be a part of *Quantity*; no more than
 an *Unit* is a *Number*, though it make part of a *Number*: so that
Quantity and *Extension* are two distinct things with him, the *first* be-
 longing properly to *Matter*, the last to a *Body*. Touching *Vacuity*, he
 conceives, that the *Bodies*, which compose a mass, are not every where
 so near one another, as not to leave some interval in several places.
 Neither does he think it necessary, that those intervals should be fill'd
 up; nor unconceivable, that there should be no *Body* between two *Bo-*
dies, which touch not one another. And when 'tis said, that those in-
 tervals cannot be conceived without *Extension*, and that consequently
 there are *Bodies* that replenish them, he frankly pronounces that not to
 be true; and affirms, that though it may be said, that between two
Bodies, which touch not one another, other *Bodies* may be placed of so
 or so many feet, &c: yet ought it not to be inferred, that therefore
 they *are* there, but onely, that they are thus placed, that there *may* be
 put between them so many *Bodies*, as joyned together would compose
 an *Extension* of so many feet. So that one conceives onely, that *Bodies*
may be placed there, but not that they *are* there: and as we can have
 an *Idea* of many *Bodies*, though none of them be in being; so we can con-
 ceive, that some *Bodies* *may* be put between others, where really there
 are none. And when 'tis alledged; that if all the *Bodies*, that fill a
 vessel full, were destroyed, the sides of the vessel would be closed to-
 gether; He professes, he understands not that ratiocination, nor can con-
 ceive, what one *Body* does to the subsistence of another, more than to
 sustain themselves mutually, when they are thrust by the neighbouring
 ones: and therefore sees not, why the sides of the vessel should close,
 if nothing did thrust them together; but understands clearly, that two
Bodies may well subsist so far from one another, that one might place a
 great many *Bodies* between them, or none at all, and yet they neither
 approach to, nor recoil from one another.

2. In the *Second*, he examines the *Changes*, which he knows in *Matter*, and makes it his business to explicate all those that respect *Quantity*, *Qualities* and *Forms*, by *Local Motion*, esteeming their needs no other.

3. In the *third*, he explains the Motion of *Artificial* Engins, and that of *Natural* ones, by one and the same Cause; endeavouring among other things to shew, that the Body of an Animal is moved after the same manner with a Watch. That cause of motion he makes the *Materia Subtilis*; and the finer or subtler that is, the better and fitter he conceives it to be to preserve Motion.

4. In the *Fourth*, he teaches, that though Experience seems to evince, that the Soul moves the Body, and that one Body moves another; yet there is nothing, but God, that can produce any motion in the World, and all other Agents, which we believe to be the Cause of this or that Motion, are no more but the *Occasion* thereof. In doing this, he advances certain *Axioms*, and *Conclusions*, which are in short,

a. The *Axioms*: That no substance has that of it self, which it can loose, without ceasing to be, what it is: That every body may loose of its motion, till it have no more left, without ceasing to be a Body: That we cannot conceive but two sorts of substances, *vid.* a *Spirit* (or *That which thinketh*) and a *Body*, wherefore they must be considered as the Causes of all, that happens, and what cannot proceed from the one, must necessarily be ascribed to the other: That to *Move*, or to cause motion, is an *Action*: That an *Action* cannot be continued but by the Agent, who began it.

b. The *Conclusions*; That no *Body* hath Motion of it self: That the *First Mover* of *Bodies* is not a *Body*: That it cannot be but a *Spirit*, that is the *First Mover*: That it cannot be but the same *Spirit*, who has begun to move *Bodies*, that continues to move.

In the *Fifth*, He treats of the Union of the Body and Soul, and the manner, how they act one upon the other; and esteems it not more difficult to conceive the Action of Spirits upon Bodies, and of Bodies upon Spirits, than to conceive the Action of Bodies upon Bodies: the cause of the great difficulty in understanding the two former; arising (according to him) from thence, that we will conceive the one by the other, not considering, that every thing acting according to its own nature, we shall never know the action of one Agent, if we will examine it by the notions we have of another, that is of a quite differing nature. Here he notes, that the Action of Bodies upon Bodies is not
more

more known to us ; than that of Spirits upon Bodies , or of Bodies upon Spirits ; and yet most men admire nothing but *this* , believing to know the *other* : whereas he Judges , that all things being well examin'd , the Action of Bodies upon Bodies is no more conceivable , than that of Spirits upon Bodies . Mean while the opinion of the Authour touching this subject , is , That the union of Soul and Body consists onely in this , that certain motions of the Body are followed by certain *Cogitations* of the Soul , and , on the contrary , that certain Thoughts of the Soul are follow'd by certain *Motions* of the Body . And , having supposed , that Bodies are said to act upon one another , when they cause some change suitable to Extension ; and Spirits to act upon one another , when they cause some change suitable to a Thought ; he infers , that when a Body acts upon a Spirit , that cannot be by causing any change of motion , of figure , or parts , as having none of all these ; nor when a Spirit acts upon a Body , that cannot be by producing any change of Thought , as having none : But , when this Body , or its motion , or figure , or other thing , depending upon its nature , can be perceived by a Spirit , so as , upon that occasion , this Spirit has thoughts , it had not before , it may be said , that the Body has acted upon this Spirit , for as much as it has caused all the change in it , whereof it was capable according to its nature .

In the *Sixth* , After he hath shew'd , what is to be understood by what we call *Soul* , and by what we call *Body* , he labours to make it out , that we are much more assured of the Existence of the Soul , than of that of the Body , which he conceives he can prove from hence , that we cannot doubt , that we think , because even doubting is thinking ; but one may doubt , whether one has a body , for several reasons , which he alledges , and thinks so cogent , that he concludes , it is not evident to him by the light of reason , that he has a Body . But supposing , there be Bodies , he examines , what are the Operations , that belong to the Soul , and what those , that belong to the Body ; and lastly , what those , that result from the Union of both : And then explains , how all those operations are perform'd , and particularly , *Sensation* ; where he shews , that the Nerves , holding at one end to the Brain , whereof they are but Allongations , and being at the other end extended to the extremities of the Body ; when an Object comes to touch those exterior ends of the Nerves , the interior ones in the Brain are presently shaken , and cause different sensations according to the diversitie of Nerves , and the differing manner , in which they are shaken . And to shew , that 'tis this shaking , that causes Sensation , he notes , that if any thing shakes the interior parts of the Nerves , though the object be absent , the Soul has presently the same sensations

sations, as it would have, if it were present. As, if one should knock on's head forcibly against a wall, the shaking, which the blow gives to the Brain, moving the interior extremities of the Nerve, which causes the sensation of Light, the Soul has the same sensation, which it would have, if it saw a thousand Candles: On the contrary, if the interior extremities of the nerves are not shaken, though the object be present, it causes no sensation; whence it comes, that if a strong Ligature be made upon the middle of the Arm, and the hand be then prick'd, no pain is felt, because the shaking of the nerves that are prick'd, being stopp'd by the Ligature, cannot reach to the extremities of the Nerves, that are within the Brain.

Advertisement.

The following *Errata*, left by the *Press* in *Nam. 16*, the *Reader* is desired thus to correct.

PAGE 269. lin 27. read, *motion of B. above the Center*; *G. is also*, with a Semi-colon after the word *Center*. p. 274. l. 13, r. *it is to do to the*. p. 277. l. 24. r. *natural days*. p. 281. l. 16. r. *of his*. ib l. 27. r. *a notion*. p. 293. l. 4. r. *enough without*. ib. l. 43. r. *to the Sine of*. p. 294. l. 1. r. *to the Sine of*.

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