

An Account of two Books:

I. *Traité de la PERCUSSION ou CHOQ Des CORPS, &c.*
par Monsieur Mariotte, de l'Academie Royale des Sciences. A
Paris, 1673. in 12°.

THis Mathematical Author begins this Book with some *Definitions*, necessary for the understanding of some terms frequently used by him. *One* is that of a *Springy Body*, by which he understands such an one, as having changed its figure by the percussión of another body, retakes of it self its former figure. *An other* is that of a *Body not Springy*, which, to him, is such an one, as having taken a new figure by the pressure of another body, conserves that figure, as Wax, &c. The *last* Definition is that of the *respective Velocity* of two bodies, by which he means that, whereby they approach to, or are removed from, one another, whatever be their own velocities.

Next he lays down certain *Suppositions* averred by divers intelligent Geometricians, and grounded upon sundry considerable Experiments. These Suppositions are, 1. That a Body being put in motion, will always continue that motion the same way with the same velocity, if it be not hindred or diverted by the encounter of another body, or some other cause. 2. That the Bodies that are impelled upwards by different forces, are raised to different heights, and that these heights have the same proportion to one another, as the Squares of the velocities, wherewith these bodies began to be raised: And reciprocally, that the bodies which fall by their own weight from different Altitudes upon one and the same Horizontal surface, do encounter that surface with different celerities, of which the Squares are to one another as their Altitudes. 3. That, if a body, (as B*) suspended at a string AB, is perpendicularly impelled upward, and raised to a certain height, as BD; that body when it is struck horizontally, so as to begin its motion with the same velocity, will be raised to the same height in C,
 by

* See the Fig.
 in the Author.

by the arch BC, the line CD being supposed horizontal : And if it falls back, whether it be by the perpendicular DB, or by the arch CB, it will re-take in the point B a velocity equal to that, which had raised it to the point in C or in D. Which two Suppositions are well established by *Galiléé* and divers other Geometricians, abstractedly from the Resistance of the Air and of other Impediments; and they are also, (saith our Author) very near conform to Experiment, the resistance of the Air notwithstanding. But he takes them in this Treatise in an exact preciseness, to make the Demonstrations the more intelligible. 4. That the small vibrations of a *Pendulum* are made in times *sensibly* equal, although they describe unequal arches : But for the facility of the Demonstrations, 'tis here supposed, that these times are *precisely* equal.

From the Experiments which he hath made with the motion of Balls that have no Spring, this general Consequence is drawn, That if a body not-springy should impel another body not-springy and unshakeable, it would remain without motion, and not turn back, there being no new cause at all for a motion that way. And thus he remarketh, that 'tis much easier to stop a ball that is rolling, and to make it lose its motion, than to drive it back with the same celerity; because, that besides the force which is requisite to stop it, there needs another to give to it again its former velocity.

So that 'tis certain to our Author, (as it is to divers others) that all motions of Reflexion are made by a Spring. And, though at first it seems difficult to believe, that bodies of the hardness of Ivory and Steel (for example) which do reflect bodies as hard as themselves, are flexible, and capable of having such an impression made on them as is required for a Spring; yet our Author easily resolves this scruple, by referring his Reader to those small impressions and dints, remaining in Iron after it hath been struck by a hard body, though Iron be harder than Ivory, and almost as hard as Steel. To which he adds, that 'twere impossible, that a Glass-ball or a Ball of baked Earth should break, if it did not change its figure when it is with great force thrown against another hard body. And in regard we see, that these Balls keep their roundness when having been struck they break not, they must needs (saith he) exactly retake their former figure

figure by vertue of their Springiness, after they have been a little impressed upon.

Besides, he takes notice, on this occasion, of an Experiment, which seems strongly to support his sentiment, which is, That if you let fall upon a great flat and polish'd Stone a Ball of Clay pretty soft, from the height of 12 or 15 inches, putting a little paper or linnen rag on the place where the said ball is to touch the stone, that so it may not stick to it, it will not remount at all, or very little: But if you let fall upon the same stone a Ball full of compressed Air, you will see that part, by which it touches the stone, flatten'd like the ball of soft earth; but this impression fully restoring it self, the ball will remount very high, and it would fly up higher, if the Air, which resists much more to a very large and very light body, than to a small and very ponderous one, did not stop a considerable part of its velocity, as well in descending as ascending.

Whence, and from other Reasons and Experiments, by him delivered, he concludes, that the greatest part of hard bodies, as *Steel, Marble, Glas, Ivory, Jasper, &c.* have a ready and strong springy power; and that all the motions of reflecting bodies are only made by springs. Whereunto he adds, that if it should be supposed that hard bodies are inflexible, it would be impossible to explicate their motions when their weights are unequal, and that the phænomena do no ways agree to such an hypothesis. But taking it for a meer Hypothesis, what he pretends to have demonstrated concerning the Springiness of Hard bodies, he tells us, that by that means all motions, befalling those bodies, after they have any way impelled one another, may easily be accounted for. And he is perswaded, that this truth may easily be seen by a great number of Propositions, which he advanceth in this Book, of which the Demonstrations agree very well with the Experiments.

II. Johannis Trithemii *STEGANOGRAPHIA, vindicata, re-
serata, & illustrata, &c. Auth. Wolfgango Ernesto Heidel,
Wormatiensf. Moguntia, 1676. in 4o.*

THis *Steganography*, (which word imports the Art of signifying ones mind to another by an occult or secret way of writing) having been censured as supposititious by some, and pernicious, magical and necromantical by others; this learned Author undertaketh to vindicate it from those aspersions, and withal to give us the true Key and meaning thereof.

After which vindication and disclosure he explains all the reputed Conjurations of Spirits, made up of the *Arabic, Hebrew, Chaldaic and Greek*, or, according to others, out of Barbarian and insignificant words: Subjoyning to all this, some new *Steganographique Artifices*, which had been promised by *Trithemius* to *Arnoldus Bosius*, and had been counted paradoxical and inexplicable.

Errata in Numb. 133.

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B R O U N C K E R, P. R. S.
