

X. *An Account of some Magnetical Experiments made before the Royal Society, on Thursday the 24th Day of June 1736. by the Rev<sup>d</sup>. J. T. Desaguliers, LL. D. F. R. S.*

I Took a Bar of Iron, of one fourth of an Inch Diameter (which having been 15 Years in an erect Position, had acquir'd a fix'd Pole at Top, so that the End which had stood uppermost attracted the North End of a Compass-Needle, and the other End the South End of the Needle); and having suspended it by a String for the Space of half a Year, it acquir'd a fix'd South Pole at that End, as well as it had done at the other in the Time of 15 Years, without diminishing the Virtue of the other End: So that both Ends of the Rod in any Situation attracted the North End of the Needle of the Compass.

That Rods of Iron untouch'd, or which have not acquir'd a Magnetic Virtue by their Situation, will with their upper End (whatever End of the Bar be held upwards) attract the North End of the Needle, and the lower End of the Bar the South End of the Needle, is a Truth known many Years ago, and mention'd in Dr. *Brown's* Book of vulgar Errors.

*An Account of some Magnetical Experiments made before the Royal Society, on Thursday the 21st of April 1737. by Dr. Defaguliers.*

**I**T is well known, and has been often found by Experience, that an iron Bar untouch'd by a Loadstone, will, with its upper End, attract the North End of the Needle of a Compass, when the said Bar is held upright, and the South End of the Needle with its lower End, when applied to it, still in a perpendicular Position, whatsoever End of the Bar be held up; unless the Bar has acquir'd a fix'd Pole by having been long in a vertical Position. But if the Bar from a vertical be brought to an horizontal Position, the Needle will return into the Situation it had before, which was in the Magnetical Meridian, the Bar being then at Right Angles to it. Upon raising or sinking the End of the Bar which is farthest from the Needle, the one or the other End of the Needle will begin to move towards the Bar. Such a Bar has in itself no fix'd Magnetic Virtue; but if it had, it must be heated red-hot, and then cool'd in an horizontal Position. A Bar thus prepar'd is fit to make the following Experiments, communicated to me by *Monsieur Du Fay*.

Hold the Bar upright, and give it a Blow or two against the Ground with its lower End; and that End will attract the South End of the Needle, when the Bar is held horizontal, and at Right Angles to the Magnetic Meridian: The other End held horizontal in the same manner, will attract the North End of the Needle. Invert the Bar, and the Virtue of it will  
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be lost by striking as many Blows with it against the Ground with the other End: Then strike another Blow or two, and the End which attracted the North End of the Needle will now attract the South End, and so *vice versa*, the Position being still horizontal.

If the Blow be given against the Ceiling, or any horizontal Body, with the upper End of the Bar, the same Virtue will be communicated as before.

This will likewise happen, if the upper or lower End of the Bar be struck with an Hammer or Mallet; whether the Blow be given end-wise or at Right Angles to the Bar: Nay, though it should be given in the Middle of the Bar; the Position of the Bar at receiving the Blow being all that is requisite; for if you give the Bar only a Jerk or Shake in that vertical Position, it will receive the Virtue, as if there were in the Iron several Threads or Beards fix'd at one End, as *Monsieur Du Fay* supposes, which the Blow or Shake laid all one way, and which were plac'd the other way by inverting the Bar, and then giving it a Shake or Blow.

*N. B.* When the Bar is plac'd horizontally, a Blow in the Middle destroys its Virtue.