

V. *An Account of the Influence which two Pendulum Clocks were observed to have upon each other, by Mr. John Ellicott, F. R. S.*

THE two Clocks upon which the following Observations were made, being designed for Regulators, particular Care was taken to have every Part made with all possible Exactness: The two Pendulums were hung in a manner different from what is usual; and so disposed, that the Wheels might act upon them with more Advantage. Upon Trial they were found not only to move with greater Freedom than common, but an heavier Pendulum was kept in Motion by a smaller Weight. They were in every respect made as near alike as possible. The Ball of each of the Pendulums weighed above 23 ℥; and required to be moved about  $1^{\circ} 5'$  from the Perpendicular, before the Teeth of the swing Wheel would scape free of the Pallets; that is, before the Clocks would be set a going. The Weight to each was 3 ℥, which would cause either of the Pendulums in their Vibrations to describe an Arch of  $3^{\circ}$ . The two Clocks were each in Cases, which shut very close, and placed Sideways to one another, so near that when the Pendulums were at Rest, they were little more than about two Feet asunder. The odd *Phænomena* observed in them were these: In less than two Hours after they were set a going, one of them (which I call N<sup>o</sup> 1.) was found to stop; and when set a going again, (as it was several times) would

would never continue going two Hours together. As it had always kept going with great Freedom, before the other Clock (which I call N<sup>o</sup> 2.) was placed near it, this led me to conceive its stopping must be owing to some Influence the Motion of one of the Pendulums had upon the other; and upon watching them more narrowly, I found the Motion of N<sup>o</sup> 2. to increase as N<sup>o</sup> 1. diminished; and at the time N<sup>o</sup> 1. stopped, N<sup>o</sup> 2. described an Arch of 5°, that is nearly two Degrees more than it would have done, if the other had not been near it, and more than it did move in a short time after the other Pendulum came to be at Rest: This made me imagine that they had a mutual Influence upon each other. Upon this I stopped the Pendulum of N<sup>o</sup> 2. leaving it quite at Rest, and set N<sup>o</sup> 1. a going, the Pendulum describing as large an Arch as the Case would permit, *viz.* about 5°. In about 20 Minutes after, I went to observe whether there was any Motion communicated to the Pendulum N<sup>o</sup> 2. when, to my Surprize, I found the Clock going, and the Pendulum to describe an Arch of 3°, whereas at the same time N<sup>o</sup> 1. did not move 4°. In about half an Hour after, N<sup>o</sup> 1. stopped, and the Motion of N<sup>o</sup> 2. was increased to very near 5°. I then stopped N<sup>o</sup> 2. a second time, and set N<sup>o</sup> 1. a going, as before; and standing to observe them, I presently found the Pendulum of N<sup>o</sup> 2. to begin to move, and the Motion to increase gradually, till in 17' 40" it described an Arch of 2° 10', at which time the Wheel discharging itself of the Pallets, the Clock went. The Arches of the Vibrations continued to increase, till (as in the former Experiment) the Pendulum moved 5°; the  
Motion

Motion of the Pendulum N<sup>o</sup> 1. gradually decreasing all the while, as the other increased; and in three Quarters of an Hour after, it stopped. I then left the Pendulum of N<sup>o</sup> 1. at Rest, and set N<sup>o</sup> 2. a going, making it describe an Arch of 50; it continued to vibrate less and less, till it described but about 30; in which Arch it continued to move all the time I observed it, which was several Hours. The Pendulum of N<sup>o</sup> 1. seemed but little affected by the Motion of N<sup>o</sup> 2. I tried these Experiments several times over, without finding any remarkable Difference. The freer the Room was from any Motion (as Peoples walking about in it, &c.) I found the Experiments to succeed the better; and once I found N<sup>o</sup> 2. set a going in 16' 20'', and N<sup>o</sup> 1. at that time stopped in 36' 40''.

I shall not offer my Opinion to this Honourable Society, concerning the Cause of these *Phænomena*, or at least not till I have farther examined it by the Help of some more Observations and Experiments.

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## VI. *Further Observations and Experiments concerning the two Clocks above-mentioned, by the Same.*

**I**N the preceding Paper I had the Pleasure to communicate to this Honourable Society, an Account of the extraordinary Influence I observed two Clocks to have upon each other, and which was attended with such Circumstances, as I believe had never before been taken Notice of. I shall now beg  
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