Some further Remarks on the Inſtrument propoſed by an Anonymous French *Author*, for effecting *a perpetual Motion, an account whereof is given in* No. 177 *of theſe Tranſactions, by* Dr. Papin. M. D: R. S. S.

HAving ſeen in the *Journal des Scavans* of *May* 13*th.* and in the *Nouvelles de la Republique des Letres* of the Month of *June*, that the Author of the perpetual Motion is not ſatisfied, but doth endeavour to anſwer the Objection that I propounded againſt his contrivance, in the Philoſophical Tranſactions of the Month of *December*, 1685. I find I muſt explain my ſelf more at large than I did in that Paper; but I begg his pardon if I ſay nothing concerning the new diſpoſition, which he ſays might be given to his Engine: My want of time makes me avoid new matters of diſpute, and I think it enough for me, if I do but ſhew that his firſt Deſcription can never ſucceed.

I am very ſorry, that this Author took ſo much trouble in trying his Bellows with ſeveral Liquors, as Oyl, Mercury, Water. I thought I had ſaid nothing, that might make him believe, that I did in the leaſt queſtion the truth, which he intended to prove againſt me by thoſe Experiments, and without any tryals I am fully enough convinced that the *Mercury* in his Engine muſt follow the laws of the *æquilibrium* of *fluid Bodies*: But the conſequence which he draws from that Principle, ſeems to be very groundleſs; for altho' the lowermoſt part of the Bellows be preſs'd by the weight of 40 inches of *Mercury*, it doth not follow, that all the parts which are ſituated higher muſt bare the ſame preſſure: To the quite contrary, it is plain that the upper part having no *Mercury* above its bears none at all; the parts that lye in the middle near the *Axes* of the Bellows, bear but 20 inches, and ſo all the reſt muſt bear more or leſs, according as they lye higher or lower: It is evident therefore, that there are

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as many parts that bear leſs than 20 inches, as there are that bear more, and the increaſe of preſſure following an Arithmetical Progreſſion, it is undeniable, that all theſe preſſures added together, will do no more than one uniform preſſure, that would be equal to 20 inches every where.

Having thus found the quantity of preſſure cauſed by the *Mercury* within the Bellows, we muſt remember that the preſſure of the *Atmoſphere* within the ſame Bellows, is equivalent but to 5 inches, as I obſerved in my firſt Paper *vid.* Philoſophical Tranſaction *No* 177 *pag.* 1241: So that we find that the inward preſſure is equivalent but to 25 inches of *Mercury* in all. Now the preſſure of the *Atmoſphere* upon the outſide is every where equal to 27 inches; from whence it appears that the preſſure without is ſtronger than the preſſure within, and ſo I had reaſon to ſay, that the Bellows ſtanding upright, muſt rather ſhut than open.

I did not think to have given this Computation ſo at large, but I have been neceſſitated to do it (as I ſaid in the beginning) ſince my firſt Paper was not ſufficient to make me be underſtood by the Author of the Perpetual Motion, however, I will be careful to ſave the time of the Reader as much as I can; and although I might obſerve ſome other things in his Deſcription, that will increaſe the difficulty of opening the Bellows, I forbare to ſpeak of them; and I will ſtick only to that which is moſt material, and makes his perpetual Motion to be altogether impoſſible.

As for the Argument the Author draws from comparing his Engine to an ordinary *Siphon*; I do beſeech him to conſider what a difference there is between a *Siphon* that lets the water run down at the bottom, and his Engine; that ſhould gather up the heavy liquor into the higheſt part of the Inſtrument, and I do not queſtion but he will acknowledge the weakneſs of this Argument.