

PHILOSOPHICAL TRANSACTIONS.

April 23. 1677.

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Dr. Wallis's Letter to the Publisher, concerning a new Musical Discovery; written from Oxford, March 14. 1677.

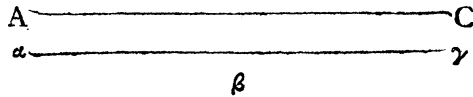
SIR,

I Have thought fit to give you notice of a discovery that hath been made here, (about three years since, or more) which I suppose may not be unacceptable to those of the *Royal Society*, who are Musical and Mathematical. 'Tis this; whereas it hath been long since observed, that, if a Viol string, or Lute string, be touched with the Bow or Hand, another string on the same or another Instrument not far from it, (if an *Unison* to it,

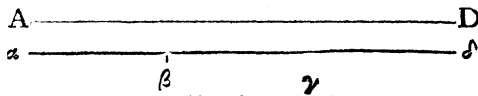
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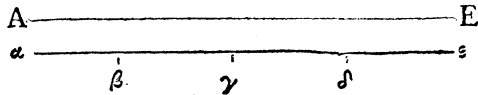
or an *Octave*, or the like) will at the same time tremble of its own accord. The cause of it, (having been formerly discussed by divers,) I do not now inquire into. But add this to the former Observation; that, not the whole of that other string doth thus tremble, but the several parts severally, according as they are Unisons to the whole, or the parts of that string which is so struck. For instance, supposing AC to be an upper Octave to $a\gamma$, and therefore an Unison to each half of it, stopped at β :



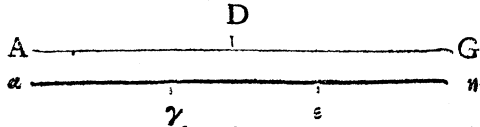
Now if, while $a\gamma$ is open, AC be struck; the two halves of this other, that is, $a\beta$ and $\beta\gamma$, will both tremble; but not the middle point at β . Which will easily be observed, if a little bit of paper be lightly wrapped about the string $a\gamma$, and removed successively from one end of the string to the other. In like manner, if AD be an upper Twelfth to $a\delta$, and consequently an U-



nison to its three parts equally divided in β, γ . Now if, $a\delta$ being open, AD be struck, its three parts, $a\beta, \beta\gamma, \gamma\delta$ will severally tremble, but not the points, β, γ ; which may be observed in like manner as the former. In like manner, if AE be a double Octave



to $a\epsilon$; the four quarters of *this* will tremble, when *that* is struck, but not the points β, γ, δ . So if AG be a Fifth to $a\eta$; and



consequently each half of *that* stopped in D, an Unison to each third part of *this* stopped in ϵ ; while *that* is struck, each part of *this* will tremble severally, but not the points γ, ϵ ; and while *this* is struck, each of *that* will tremble, but not the point D. The like will hold in lesser concords; but the less remarkably as the number of divisions increases.

This was first of all, (that I know of) discovered by Mr. *William Noble*, a Master of Arts of *Merton-Colledge*; and by him shewed

shewed to some of our Musicians about three years since ; and after him by Mr. *Thomas Pigot*, a Batchelour of Arts, and Fellow of *Wadham-Colledge*, who, giving notice of it to some others, found, that (unknown to him) the same had been formerly taken notice of by Mr. *Noble*, and (upon notice from him) by others: and it is now commonly known to our Musicians here. I add this further, (which I took notice of upon occasion of making trial of the other,) that the same string, as $\alpha\gamma$, being struck in the midst at β , (each part being unison to the other,) will give no clear Sound at all ; but very confused. And not only so (which others also have observed, that a string doth not sound clear if struck in the midst;) but also, if $\alpha\delta$ be struck at β or γ , where one part is an Octave to the other ; and in like manner, if $\alpha\epsilon$ be struck at β or δ ; the one part being a double Octave to the other. And so if $\alpha\zeta$ be struck in γ or δ ;



the one part being a Fifth to the other, and so in other like consonant divisions : But still the less remarkable as the number of divisions increaseth. This and the former I judge to depend upon one and the same cause ; *viz.* the contemporary vibrations of the several Unison parts, which make the one tremble at the motion of the other : But when struck at the respective points of divisions, the sound is incongruous, by reason that the point is disturbed which should be at rest.

Postscript.

A Lute-string or Viol-string will thus answer, not only to a consonant string on the same or a neighbouring Lute or Viol ; but to a consonant Note in Wind-Instruments : which was particularly tried on a Viol, answering to the consonant Notes on a Chamber-Organ, very remarkably : But not so remarkably, to the Wirestrings of an Harpsichord. Which, whether it were because of the different texture in Metal-strings from that of Gut-strings ; or (which I rather think) because the Metal-strings, though they give to the Air as smart a stroak, yet not so diffusive as the other ; I list not to dispute. But Wind-Instruments give to the Air as communicative a concussion, if not more, than that of Gut-strings. And we feel the Wainscot-seats, on which we sit or lean, to tremble constantly at certain Notes on the Organ or other

Wind-Instruments ; as well as at the same Notes on a Base-Viol. I have heard also (but cannot aver it) of a thin, fine Venice-glass, cracked with the strong and lasting sound of a Trompet or Cornet (near it) sounding an Unison or a Consonant note to that of the Tone or Ting of the Glass. And I do not judge the thing very unlikely, though I have not had the opportunity of making the Trial.

An Improvement of the Bononian Stone shining in the dark.

THe Worthy Signor *Malpighi* in a late Letter of his to the Publisher, of the 9th of *March*, takes notice, that one Signor *Zagonius* had a way of making out of the *Bonianian* Stone calcined, Statues and Pictures variously shining in the dark. But he adds (to our sorrow) that that person lately died, without discovering to any body his method of preparing the said Stone.

An Extract of a Letter, written from Aberdeen Febr. 17. 1677^e, concerning a Man of a strange Imitating nature, as also of several human calculus's of an unusual bigness.

S I R,

I Am very sensible of the great civility, wherewith you were pleased to entertain Master *Scougall* and me, when we waited on you last Summer; and shall be ready on all occasions to give you that account you then desired of things philosophical that may occur here, to promote that noble design you have in hand. I remember, we had then occasion to speak of a Man in this Country very remarkable for somewhat peculiar in his temper, that inclines him to imitate unawares all the gestures and motions of those with whom he converseth. We then had never seen him our selves. Since our return we were together at *Scrachbogie* where he dwells, and, notwithstanding all we had heard of him before, were somewhat surprized with the oddness of this *Dotrel*-quality. This *Donald Monro* (for that is his name,) being a little old and very plain man, of a thin slender body, hath been subject to this infirmity, as he told us, from his very infancy. He is very loath to have it observed, and therefore casts down his eyes when he walks in the streets, and turns them aside when he is in company. We had made several trials before he perceived our design; and afterward had much ado to make