AC by the centrifugal force, is equal to the time of describing $\frac{1}{2}$ of FC by gravity. These spaces, being similarly described in equal times, are proportional to the accelerating forces. Therefore $\frac{1}{2}$ FC : $\frac{1}{2}$ AC, or FC : AC $=$ gravity : centrifugal force. Complete the parallelogram FCEK. A particle at E is urged by its weight in the direction KE, with a force which may be expressed by FC or KE; and it is urged by the centrifugal force in the direction CE, with a force $=$ AC or CE. By their combined action it is urged in the direction FE. Therefore, as the surface of standing water is always at right angles to the action of gravity, that is, to the plumb-line, so the surface of the water in the revolving bucket is perpendicular to the action of the combined force FE.

Let NEO be the position of the bucket, which just holds all the water which it received as it passed the spout when not affected by the centrifugal force; and let NDO be its position when it would be empty. Let the vertical lines through D and E cut the circle described round C with the radius CF in the points H and I. Draw HC, IC, cutting the circle AOB in L and M. Make the arch $d' \delta$ equal to AL, and the arch $e' \iota$ equal to AM: Then C δ and C ι will be the positions of the bucket on the revolving wheel, corresponding to CDO and CEO on the wheel at rest. Water will begin to run out at ι, and it will be all gone at δ.—The demonstration is evident.

The force which now urges the wheel is still the weight *really* in the buckets: for though the water is urged in the direction and with the force FE, one of its constituents, CE, has no tendency to impel the wheel; and KE is the only impelling force.

It is but of late years that mills have been constructed or attended to with that accuracy and scientific skill which are necessary for deducing confidential conclusions from any experiments that can be made with them; and it is therefore no matter of wonder that the opinions of mill-wrights