

tion, will be proportional to the squares of the velocities directly, and to the chords of the curvature having the direction of the forces inversely.

PROP. I. The resistances, and (by the third law of motion), the impulses of fluids on similar bodies, are proportional to the surfaces of the solid bodies, to the densities of the fluids, and to the squares of the velocities, jointly.

We must now observe, that when we suppose the particles of the fluid to be in mutual contact, we may either suppose them elastic or unelastic. The motion communicated to the collection of elastic particles must be double of what the same body, moving in the same manner, would communicate to the particles of an elastic fluid. The impulse and resistance of elastic fluids must therefore be double of those of unelastic fluids.—But we must caution our readers not to judge of the elasticity of fluids by their sensible compressibility. A diamond is incomparably more elastic than the finest foot-ball, though not compressible in any sensible degree.—It remains to be decided, by well-chosen experiments, whether water be not as elastic as air. If we suppose, with Boscovich, the particles of perfect fluids to be at a distance from each other, we shall find it difficult to conceive a fluid void of elasticity. We hope that the theory of their impulse and resistance will suggest experiments which will decide this question, by pointing out what ought to be the absolute impulse or resistance in either case. And thus the fundamental proposition of the impulse and resistance of fluids, taken in its proper meaning, is susceptible of a rigid demonstration, relative to the only distinct notion that we can form of the internal constitution of a fluid. We say, *taken in its proper meaning*; namely, that the impulse or resistance of fluids is a pressure, opposed and measured by another pressure, such as a pound weight, the force of a spring, the pressure of the atmosphere, and the like. And we apprehend that it would be very difficult to find any