ed to originate in the mutual repulsion of its particles, has been investigated by Newton, and the actual statement of the law itself, as announced by Mariotte, "that the density of the air, or the quantity of it contained in the same space, is, *cæteris paribus*, proportional to the pressure it supports," has recently been verified within very extensive limits by direct experiment, by a committee of the Royal Academy of Paris. This law contains the principle of solution of every dynamical question that can occur relative to the equilibrium of elastic fluids, and is therefore to be regarded as one of the highest *axioms* in the science of pneumatics.

Hydrostatics.

(249.) The principles of the equilibrium of liquids, understanding by this word such fluids as do not, though quite at liberty, attempt to dilate themselves beyond a certain point, are at once few and simple. The first steps towards a knowledge of them were made by Archimedes, who established the general fact, that a solid immersed in a liquid loses a portion of its weight equal to that of the liquid it displaces. It seems very astonishing, after this, that it should not have been at once concluded that the weight thus said to be *lost* is only *counteracted* by the upward pressure of the liquid, and that, therefore, a portion of any liquid, surrounded on all sides by a liquid of the same kind, does really exert its weight in keeping its place. Yet the prejudice that "liquids do not gravitate in their natural place" kept its ground, and was only dispelled with the mass of error and absurdity which the introduction of a rational and experimental philosophy by Galileo swept away.

(250.) The hydrostatical law of *the equal pressure of liquids in all directions*, with its train of curious and important consequences, is an immediate conclusion from the perfect mobility of their parts among one another, in consequence of which each of them tends to recede from an excess of pressure on one side, and thus bears upon the rest, and distributes the pressure among its neigh-