

would satisfy us that a musket ball, that has a velocity sufficient to range seventeen miles in a vacuum, actually falls short of half a mile ; and that so rapidly does the resistance increase with the velocity, that it would become at length so great that a ball would be stopped as if fired against a stone wall !

Another property of fluids that leads to some singular results is their power of pressing in all directions alike. Hence it becomes true that any quantity of a fluid, however small, will balance any quantity, however large. Hence the hydrostatic bellows ; by standing on which and blowing forcibly into a tube, a man may raise himself from the floor — or still more certainly by pouring into that tube a single pint of water. Hence, too, by inserting a tube, not more than the tenth of an inch in diameter, in the strongest vessel filled with water, and then making the tube sufficiently strong and pouring water into it, the vessel may be burst ; that is, the weight of a single quart of water is sufficient to burst asunder an iron-bound vessel. Or by fitting a strong piston to a large cylinder, the powerful machine called the hydrostatic press is formed, by which trees are torn up by the roots, porous bodies astonishingly compressed, and enormous weights elevated.

This same principle (of equal pressure in all directions) prevents us from being conscious of the great weight of the atmosphere. Indeed, we are not aware that any pressure is upon us ; and unless we move very rapidly, or against a strong wind, we scarcely realize that the air offers any resistance. Hence a man unacquainted with pneumatics can hardly be made to believe that every square inch of surface upon his body does in fact sustain a weight of fifteen pounds, and that the whole weight of the atmosphere that lies upon him is not less than fourteen and a half tons ; while the whole sur-