bors. In this form it was laid down by Newton, and has proved one of the most useful and fertile principles of physico-mathematical reasoning on the equilibrium of fluid masses, as affording a means of tracing the action of a force applied at any point of a liquid through its whole extent. It applies, too, without any modification, to expansible fluids as well as to liquids; and, in the applications of geometry to this subject, enables us to dispense with any minute and intricate inquiries as to the mode in which individual particles act on each other.

(251.) In a practical point of view, this law is remarkable for the directness of its application to useful purposes. The immediate and perfect distribution of a pressure applied on any one part, however small, of a fluid surface through the whole mass, enables us to communicate *at one instant* the same pressure to any number of such parts by merely increasing the surface of the fluid, which may be done by enlarging the containing vessel; and if the vessel be so constructed that a large portion of its surface shall be movable together, the pressures on all the similar parts of this portion will be united into one consentient force, which may thus be increased to any extent we please. The hydraulic press, invented by Bramah (or rather applied by him after a much more ancient inventor, Stevin), is constructed on this principle. A small quantity of water is driven by sufficient pressure into a vessel *already full*, and provided with a movable surface or piston of great size. Under such circumstances something must give way; the great surface of the piston accumulates the pressure on it to such an extent that nothing can resist its violence. Thus trees are torn up by the roots; piles extracted from the earth; woollen and cotton goods compressed into the most portable dimensions; and even hay, for military service, reduced to such a state of coercion as to be easily packed on board transports.

(252.) Liquids differ from aëriform fluids by their *cohesion*, which may be regarded as a kind of approach to a solid state, and was so regarded by Bacon (193.). Indeed, there can be little doubt that the solid, liquid,