same effect as if they were both together supported immediately at that point. Or more generally, we may state the principle to be this: that the pressure by which a heavy body is supported continues the same, however we alter the form or position of the body, so long as the magnitude and material continue the same.

The experimental truth of this principle is a matter of obvious and universal experience. The weight of a basket of stones is not altered by shaking the stones into new positions. We cannot make the direct burden of a stone less by altering its position in our hands; and if we try the effect on a balance or a machine of any kind, we shall see still more clearly and exactly that the altered position of one weight, or the altered arrangement of several, produces no change in their effect, so long as their point of support remains unchanged.

This general fact is obvious, when we possess in our minds the ideas which are requisite to apprehend it clearly. But when we are so prepared, the truth appears to be manifest, even independent of experience, and is seen to be a rule to which experience must conform. What, then, is the leading idea which thus enables us to reason effectively upon mechanical subjects? By attention to the course of such reasonings, we perceive that it is the idea of *Pressure;* Pressure being conceived as a measurable effect of heavy bodies at rest, distinguishable from all other effects, such as motion, change of figure, and the like. It is not here necessary to attempt to trace the history of this idea in our minds; but it is certain that such an idea may be distinctly formed, and that upon it the whole science of statics may be built. *Pressure*, *load*, *weight*, are names by which this idea is denoted when the effect tends directly downwards; but we may have pressure without motion, or *dead pull*, in other cases, as at the critical instant when two nicely-matched wrestlers are balanced by the exertion of the utmost strength of each.

Pressure in any direction may thus exist without any motion whatever. But the causes which produce such pressure are capable of producing motion, and are generally seen producing motion, as in the above instance of the wrestlers, or in a pair of scales employed in weighing; and thus men come to consider pressure as the exception, and motion as the rule: or perhaps they image to themselves the motion which *might* or *would* take place; for instance, the motion which the arms of a lever *would* have if they *did* move. They turn away from the case really before them, which is that of bodies at rest, and balancing each other, and pass to another case, which is arbitrarily