

The difficulty of holding fast this Idea of Fluidity so as to trace its consequences with infallible strictness of demonstration, may be judged of from the circumstance that, even at the present day, men of great talents, not unfamiliar with the subject, sometimes admit into their reasonings an oversight or fallacy with regard to this very point. The importance of the Idea when clearly apprehended and securely held, may be judged of from this, that the whole science of Hydrostatics in its most modern form is only the development of the Idea. And what kind of attempts at science would be made by persons destitute of this Idea, we may see in the speculations of Aristotle concerning light and heavy bodies, which we have already quoted; where, by considering light and heavy as opposite qualities, residing in things themselves, and by an inability to apprehend the effect of surrounding fluids in supporting bodies, the subject was made a mass of false or frivolous assertions, which the utmost ingenuity could not reconcile with facts, and could still less deduce from the asserted doctrines any new practical truths.

In the case of Statics and Hydrostatics, the most important condition of their advance was undoubtedly the distinct apprehension of these two *appropriate Ideas*—*Statical Pressure*, and *Hydrostatical Pressure* as included in the idea of Fluidity. For the Ideas being once clearly possessed, the experimental laws which they served to express (that the whole pressure of a body downwards was always the same; and that water, and the like, were fluids according to the above idea of fluidity), were so obvious, that there was no doubt nor difficulty about them. These two ideas lie at the root of all mechanical science; and the firm possession of them is, to this day, the first requisite for a student of the subject. After being clearly awakened in the mind of Archimedes, these ideas slept for many centuries, till they were again called up in Galileo, and more remarkably in Stevinus. This time, they were not destined again to slumber; and the results of their activity have been the formation of two Sciences, which are as certain and severe in their demonstrations as geometry itself, and as copious and interesting in their conclusions; but which, besides this recommendation, possess one of a different order,—that they exhibit the exact impress of the laws of the physical world, and unfold a portion of the rules according to which the phenomena of nature take place, and must take place, till nature herself shall alter.