resistance of fluids to bodies moving through them; a knowledge of which is of great importance in naval architecture and in gunnery, where the resistance of the air acts to an enormous extent. Such, too, among the practical subjects which depend mainly on this branch of science, are the use of sails in navigation; the construction of wind-mills and water-wheels; the transmission of water through pipes and channels; the construction of docks and harbors, &c

Nature of Solids in general.

(257.) The intimate constitution of solids is, in all probability, very complicated, and we cannot be said to know much of it. By some recent delicate experiments on the dimensions of wires violently strained, it has been shown that they are to a certain small extent capable of being dilated by tension, as they are also of being compressed by pressure, but within limits even narrower than those of liquids. Usually, when strained too far, they break, and refuse to re-unite; or, if compressed too forcibly, take a permanent contraction of dimension. Thus wood may be indented by a blow, and metals rendered denser and heavier by hammering or rolling. There is a certain degree of confusion prevalent in ordinary language about the hardness, elasticity, and other similar qualities, of solids, which it may be well to remove. Hardness is that disposition of a solid which renders it difficult to displace its parts among themselves. Thus steel is harder than iron; and diamond almost infinitely harder than any other substance in nature: but the compressibility of steel, or the extent to which it will yield to a given pressure and recover itself, is not much less than that of soft iron, and that of ice is very nearly the same with that of water.

(258.) Again, we call Indian rubber a very elastic body, and so it is; but in a different sense from steel. Its parts admit of great mutual displacement without permanent dislocation; however distorted, it recovers its figure readily, but with a small force. Yet, if Indian