(189.) The necessity of this appeal to experiment in every thing relating to the motions of fluids on the large scale has long been felt. Newton himself, who laid the first foundations of hydrodynamical science (so this branch of dynamics is called), distinctly perceived it, and set the example of laborious and exact experiments on their resistance to motion, and other particulars. Venturi, Bernoulli, and many others, have applied the method of experiment to the motions of fluids in pipes and canals; and recently the brothers Weber have published an elaborate and excellent experimental inquiry into the phenomena of waves. One of the greatest and most successful attempts, however, to bring an important, and till then very obscure, branch of dynamical inquiry back to the dominion of experiment, has been made by Chladni and Savart in the case of sound and vibratory motion in general; and it is greatly to be wished that the example may be followed in many others hardly less abstruse and impracticable when theoretically treated. In such cases, the inductive and deductive methods of inquiry may be said to go hand in hand, the one verifying the conclusions deduced by the other; and the combination of experiment and theory, which may thus be brought to bear in such cases, forms an engine of discovery infinitely more powerful than either taken separately. This state of any department of science is perhaps of all others the most interesting, and that which promises the most to research.

(190.) It can hardly be expected that we should terminate this division of our subject without some mention of the "prerogatives of instances" of Bacon, by which he understands characteristic phenomena, selected from the great miscellaneous mass of facts which occur in nature, and which, by their number, indistinctness, and complication, tend rather to confuse than to direct the mind in its search for causes and general heads of induction. Phenomena so selected, on account of some peculiarly forcible way in which