

back like a ball." Nothing material was added to such views till modern times.

Thus the first conjectures of those who philosophized concerning sound, led them to an opinion concerning its causes and laws, which only required to be distinctly understood, and traced to mechanical principles, in order to form a genuine science of Acoustics. It was, no doubt, a work which required a long time and sagacious reasoners, to supply what was thus wanting; but still, in consequence of this peculiar circumstance in the early condition of the prevalent doctrine concerning sound, the history of Acoustics assumes a peculiar form. Instead of containing, like the history of Astronomy or of Optics, a series of generalizations, each including and rising above preceding generalizations; in this case, the highest generalization is in view from the first; and the object of the philosopher is to determine its precise meaning and circumstances in each example. Instead of having a series of inductive Truths, successively dawning on men's minds, we have a series of Explanations, in which certain experimental facts and laws are reconciled, as to their mechanical principles and their measures, with the general doctrine already in our possession. Instead of having to travel gradually towards a great discovery; like Universal Gravitation, or Luminiferous Undulations, we take our stand upon acknowledged truths, the production and propagation of sound by the motion of bodies and of air; and we connect these with other truths, the laws of motion and the known properties of bodies, as, for instance, their elasticity. Instead of *Epochs of Discovery*, we have *Solutions of Problems*; and to these we must now proceed.

We must, however, in the first place, notice that these Problems include other subjects than the mere production and propagation of sound generally. For such questions as these obviously occur:—what are the laws and cause of the differences of sounds;—of acute and grave, loud and low, continued and instantaneous;—and, again, of the differences of articulate sounds, and of the quality of different voices and different instruments? The first of these questions, in particular, the real nature of the difference of acute and grave sounds, could not help attracting attention; since the difference of notes in this respect was the foundation of one of the most remarkable mathematical sciences of antiquity. Accordingly, we find attempts to explain this difference in the ancient writers on music. In Ptolemy's *Harmonics*, the third Chapter of the first Book is entitled, "How the