the laws of probability enable us on such data to say. Again, suppose, *before* we were allowed to measure the distances, the wafer were to have been taken away, and we were called upon, on the mere evidence of the marks on the wall, to say where it had been placed; it is clear that no reasoning would enable any one to say with certainty; yet there is assuredly one place which we may fix on with greater probability of being right than any other. Now, this is a very similar case to that of an observer—an astronomer for example—who would determine the exact place of a heavenly body. He points to it his telescope, and obtains a series of results disagreeing among themselves, but yet all agreeing within certain limits, and only a comparatively small number of them deviating considerably from the mean of all; and from these he is called upon to say, definitively, what he shall consider to have been the most probable place of his star at the moment. Just so in the calculation of physical *data;* where no two results agree exactly, and where all come within limits, some wide, some close, what have we to guide us when we would make up our minds what to conclude respecting them? It is evident that any system of calculation that can be shown to lead of necessity to the most probable conclusion where certainty is not to be had must be valuable. However, as this doctrine is one of the most difficult and delicate among the applications of mathematics to natural philosophy, this slight mention of it must suffice at present.

(231.) In the foregoing pages we have endeavored to explain the spirit of the methods to which, since the revival of philosophy, natural science has been indebted for the great and splendid advances it has made. What we have all along most earnestly desired to impress on the student is, that natural philosophy is essentially united in all its departments, through all which one spirit reigns and one method of inquiry applies. It cannot, however, be studied as a whole, without subdivision into parts; and, in the remainder of this discourse, we shall therefore take a summary view of the progress which has been made in the different branches into which it may