

will be considered in another part of this work) will teach us how, in the course of ages, mankind has gradually attained to a partial insight into the relative dependence of phenomena. My duty is to depict the results of our knowledge in all their bearings with reference to the present. In all that is subject to motion and change in space, the ultimate aim, the very expression of physical laws, depend upon *mean numerical values*, which show us the constant amid change, and the stable amid apparent fluctuations of phenomena. Thus the progress of modern physical science is especially characterized by the attainment and the rectification of the mean values of certain quantities by means of the processes of weighing and measuring; and it may be said, that the only remaining and widely-diffused hieroglyphic characters still in our writing—*numbers*—appear to us again, as powers of the Cosmos, although in a wider sense than that applied to them by the Italian School.

The earnest investigator delights in the simplicity of numerical relations, indicating the dimensions of the celestial regions, the magnitudes and periodical disturbances of the heavenly bodies, the triple elements of terrestrial magnetism, the mean pressure of the atmosphere, and the quantity of heat which the sun imparts in each year, and in every season of the year, to all points of the solid and liquid surface of our planet. These sources of enjoyment do not, however, satisfy the poet of Nature, or the mind of the inquiring many. To both of these the present state of science appears as a blank, now that she answers doubtfully, or wholly rejects as unanswerable, questions to which former ages deemed they could furnish satisfactory replies. In her severer aspect, and clothed with less luxuriance, she shows herself deprived of that seductive charm with which a dogmatizing and symbolizing physical philosophy knew how to deceive the understanding and give the rein to imagination. Long before the discovery of the New World, it was believed that new lands in the Far West might be seen from the shores of the Canaries and the Azores. These illusive images were owing, not to any extraordinary refraction of the rays of light, but produced by an eager longing for the distant and the unattained. The philosophy of the Greeks, the physical views of the Middle Ages, and even those of a more recent period, have been eminently imbued with the charm springing from similar illusive phantoms of the imagination. At the limits of circumscribed knowledge, as from some lofty island shore, the eye delights to penetrate