

descriptive natural history, geology, or mathematical astronomy? I think we ought to distinguish here between him whose task it is to collect the individual details of various observations, and study the mutual relations existing among them, and him to whom these relations are to be revealed, under the form of general results. The former should be acquainted with the specialities of phenomena, that he may arrive at a generalization of ideas as the result, at least in part, of his own observations, experiments, and calculations. It can not be denied, that where there is an absence of positive knowledge of physical phenomena, the general results which impart so great a charm to the study of nature can not all be made equally clear and intelligible to the reader, but still I venture to hope, that in the work which I am now preparing on the physical laws of the universe, the greater part of the facts advanced can be made manifest without the necessity of appealing to fundamental views and principles. The picture of nature thus drawn, notwithstanding the want of distinctness of some of its outlines, will not be the less able to enrich the intellect, enlarge the sphere of ideas, and nourish and vivify the imagination.

There is, perhaps, some truth in the accusation advanced against many German scientific works, that they lessen the value of general views by an accumulation of detail, and do not sufficiently distinguish between those great results which form, as it were, the beacon lights of science, and the long series of means by which they have been attained. This method of treating scientific subjects led the most illustrious of our poets\* to exclaim with impatience, "The Germans have the art of making science inaccessible." An edifice can not produce a striking effect until the scaffolding is removed, that had of necessity been used during its erection. Thus the uniformity of figure observed in the distribution of continental masses, which all terminate toward the south in a pyramidal form, and expand toward the north (a law that determines the nature of climates, the direction of currents in the ocean and the atmosphere, and the transition of certain types of tropical vegetation toward the southern temperate zone), may be clearly apprehended without any knowledge of the geodesical and astronomical operations by means of which these pyramidal forms of continents have been determined. In like manner, physical geography teaches us by how many leagues

\* Göthe, in *Die Aphorismen über Naturwissenschaft*, bd. 1., s. 155  
(*Werke kleine Ausgabe*, von 1833.)