

an opinion very natural in one who had been immersed in the study of the general analogies of the forms of plants. But though this is excusable in Cæsalpinus, the rejection of this definiteness of form a hundred years later, when its existence had been proved, and its laws developed by numerous observers, cannot be ascribed to anything but strong prejudice; yet this was the course taken by no less a person than Buffon. "The form of crystallization," says he,⁴ "is *not a constant character*, but is more equivocal and more variable than any other of the characters by which minerals are to be distinguished." And accordingly, he makes no use of this most important feature in his history of minerals. This strange perverseness may perhaps be ascribed to the dislike which Buffon is said to have entertained for Linnæus, who had made crystalline form a leading character of minerals.

It is not necessary to mark all the minute steps by which mineralogists were gradually led to see clearly the nature and laws of the fixity of crystalline forms. These forms were at first noticed in that substance which is peculiarly called rock-crystal or quartz; and afterwards in various stones and gems, in salts obtained from various solutions, and in snow. But those who observed the remarkable regular figures which these substances assume, were at first impelled onwards in their speculations by the natural tendency of the human mind to generalize and guess, rather than to examine and measure. They attempted to snatch at once the general laws of geometrical regularity of these occurrences, or to connect them with some doctrine concerning formative causes. Thus Kepler,⁵ in his *Harmonics of the World*, asserts a "*formatrix facultas*, which has its seat in the entrails of the earth, and, after the manner of a pregnant woman, expresses the five regular geometrical solids in the forms of gems." But Philosophers, in the course of time, came to build more upon observation, and less upon abstract reasonings. Nicolas Steno, a Dane, published, in 1669, a dissertation *De Solido intra Solidum Naturaliter contento*, in which he says,⁶ that though the sides of the hexagonal crystal may vary, *the angles are not changed*. And Dominic Gulielmini, in a *Dissertation on Salts*, published in 1707, says,⁷ in a true inductive spirit, "Nature does not employ all figures, but only certain ones of those which are possible; and of these, the determination is not to be fetched from the brain, or proved *à priori*, but obtained by experiments and observations." And

⁴ *Hist. des Min.* p. 343.

⁵ Linz. 1619, p. 161.

⁶ p. 69.

⁷ p. 19.