

special virtue of these stones and their hexagonal figure; let therefore the experimenter go on, and he will find the same in other transparent stones, in dark ones as well as in light-colored. He will find the same effect also in other forms than the hexagon, if they be furrowed in the surface, as the Irish crystals are. Let him consider too, that he sees the same colors in the drops which are dashed from oars in the sunshine;—and in the spray thrown by a mill-wheel;—and in the dew-drops which lie on the grass in a meadow on a summer morning;—and if a man takes water in his mouth and projects it on one side into a sunbeam;—and if in an oil lamp hanging in the air, the rays fall in certain positions upon the surface of the oil;—and in many other ways, are colors produced. We have here a collection of instances, which are almost all examples of the same kind as the phenomena under consideration; and by the help of a principle collected by induction from these facts, the colors of the rainbow were afterwards really explained.

“With regard to the form and other circumstances of the bow he is still more precise. He bids us measure the height of the bow and of the sun, to show that the centre of the bow is exactly opposite to the sun. He explains the circular form of the bow,—its being independent of the form of the cloud, its moving when we move, its flying when we follow,—by its consisting of the reflections from a vast number of minute drops. He does not, indeed, trace the course of the rays through the drop, or account for the precise magnitude which the bow assumes; but he approaches to the verge of this part of the explanation; and must be considered as having given a most happy example of experimental inquiry into nature, at a time when such examples were exceedingly scanty. In this respect, he was more fortunate than Francis Bacon, as we shall hereafter see.

“We know but little of the biography of Roger Bacon, but we have every reason to believe that his influence upon his age was not great. He was suspected of magic, and is said to have been put into close confinement in consequence of this charge. In his work he speaks of Astrology, as a science well worth cultivating. ‘But,’ says he, ‘Theologians and Decretists, not being learned in such matters, and seeing that evil as well as good may be done, neglect and abhor such things, and reckon them among Magic Arts.’ We have already seen, that at the very time when Bacon was thus raising his voice against the habit of blindly following authority, and seeking for all science in Aristotle, Thomas Aquinas was employed in fashioning Aristotle’s tenets into that fixed form in which they became the great impediment to the