idea of transparency, congelation, and solidity would not, according to the physics of the ancients,* and their ideas of the solidification of fluids, have referred directly to cold and ice; but the affinity between *κρύσταλλος*, *κρύος*, and *κρυσταίνω*, as well as this comparison with the most transparent of all bodies, gave rise to the more definite assertion that the vault of heaven consisted of ice or of glass. Thus we read in Lactantius: "Cœlum aërem glaciatum esse" and "vitreum cœlum." Empedocles undoubtedly did not refer to the glass of the Phœnicians, but to air, which was supposed to be condensed into a transparent solid body by the action of the fiery ether. In this comparison with ice (*κρύσταλλος*), the idea of transparency predominated; no reference being here made to the origin of ice through cold, but simply to its conditions of transparent condensation. While poets used the term crystal, prose writers (as found in the note on the passage cited from Achilles Tatius, the commentator of Aratus) limited themselves to the expression *crystalline* or *crystal-like*, *κρυσταλλοειδής*. In like manner, *παγος* (from *πήγνυσθαι*, to become solid) signifies a piece of ice—its condensation being the sole point referred to.

The idea of a crystalline vault of heaven was handed down to the Middle Ages by the fathers of the Church, who believed the firmament to consist of from seven to ten glassy strata, incasing one another like the different coatings of an onion. This supposition still keeps its ground in some of the monasteries of Southern Europe, where I was greatly surprised to hear a venerable prelate express an opinion in reference to the fall of aërolites at Aigle, which at that time formed a subject of considerable interest, that the bodies we called meteoric stones with vitrified crusts were not portions of the fallen stone itself, but simply fragments of the crys-

and the admirable fragment of the *Meteorologia Veterum* of Julius Ideler, have hitherto been very imperfectly, and, for the most part, superficially considered.

* The ideas that fire has the power of making rigid (Aristot., *Probl.*, xiv., 11), and that the formation of ice itself may be promoted by heat, are deeply rooted in the physics of the ancients, and based on a fanciful theory of contraries (*Antiperistasis*)—on obscure conceptions of polarity (of exciting opposite qualities or conditions). (*Vide supra*, p. 14, and note.) The quantity of hail produced was considered to be proportional to the degree of heat of the atmospheric strata. (Aristot., *Meteor.*, i., 12.) In the winter fishery on the shores of the Euxine, warm water was used to increase the ice formed in the neighborhood of an upright tube. (Alex. Aphrodis., fol. 86, and Plut., *De primo Frigido*, c. 12.)