

of Mr. W. O. Field<sup>5</sup> of the American Geographical Society and Mr. M. Miller, and perhaps we may anticipate an early solution of the Taku mystery.

MS. received 11 December 1950

## REFERENCES

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## EARLY DISCOVERERS

### VI

#### ROBERT HOOKE

##### *Observables in figur'd Snow\**

Exposing a Piece of black Cloth . . . to the falling Snow I have often with great Pleasure observed such an infinite variety of curiously figur'd Snow, that it would be almost as impossible to draw the Figure and Shape of every of them (*sic*) as to imitate exactly the curious and Geometrical Mechanisme of Nature in any one. . . .

I observed, that if they were of any regular Figures, they were always branched out with Six principal branches, all of equal length, Shape and make, from the center (*sic*), being each of them inclin'd to either of the next branches on either Side of it, by an angle of Sixty degrees. . . .

Now as all these stems were for the most part in one flake exactly of the same make, so were they in differing Figures of very differing ones; so that in a very little time I have observ'd above an hundred several sizes & shapes of these starry flakes.

The branches also out of each stem of any one of the flakes, were exactly alike in the same flake . . . that is, if the branchings of the one were small *Parallelipipeds* or Plates the branches of the other five were the same. . . . The bigger [the flakes] were magnify'd, the more irregularities appear'd in them; but this irregularity seem'd ascribable to the thawing & breaking of the flake by the fall, and not at all to the defect of the plastic virtue of nature —; yet I am very apt to think, that could we have a sight of them through a *Microscope* as they are generated in the clouds before their Figures are vitiated by external accidents, they would exhibit abundance of curiosity & neatness there also. For since I have observ'd the Figures of *Salts* and Minerals to be some of them so exceeding small that I have been scarcely able to perceive them with the *Microscope* and yet have been regular and since (as far as I have yet examin'd it) there seems to be but one and the same cause that produces both these effects, I think it not irrational to suppose that these pretty figur'd Stars of *Snow*, when at first generated might also be very regular and exact.

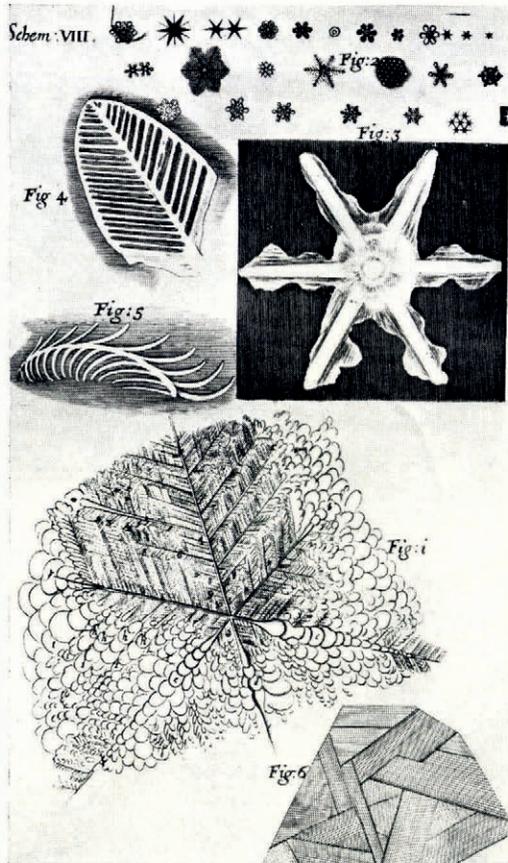
##### *Of Several kinds of frozen Figures*

I have very often in a Morning, when there has been a great hoar-frost, with an indifferently magnifying *Microscope*, observ'd the small *Stiræ*, or Crystalline beard, which then usually covers

\* From *Micrographia, or Some Physiological Descriptions of Minute Bodies made by Magnifying Glasse, with Observations and Inquiries thereupon*. By R. Hooke, Fellow of the Royal Society, London 1665.

the face of most bodies that lie open to the cold air, and found them to be generally *Hexangular prismatical* bodies, much like the long Crystals of Salt-peter, save onely that the ends of them were differing: for whereas those of *Nitre* are for the most part *pyramidal*, being terminated either in a point or edge; these of Frost were hollow. . . .

But this was onely the Figure of the *Bearded hoar-frost*; and as for the particles of other kinds of hoar-frosts, they seem'd for the most part irregular, or of no certain Figure. Nay, the parts



of those curious branchings or *vorticés*, that usually in cold weather tarnish the surface of glass, appear through the *Microscope* very rude and unshapen, as do most other kinds of frozen Figures of *Snow*, frozen *Urine*, Hail, several *Figures* frozen in common Water, &c.

Some observations of each of which I shall hereunto annex, because if well consider'd and examin'd they may, perhaps, prove very instructive for the finding out . . . the most simple and plain operation of Nature, of which, . . . we are yet ignorant.