geometrical forms; and they are susceptible of being cleft or split much easier in certain directions than in others—they have a *grain*, which glass has not. When other substances having this peculiarity (and which are called *crystallized* substances) were examined, they were all, or by far the greater part, found to possess this singular property of *double refraction;* and it was very natural to conclude, therefore, that the same thing took place in all of them, viz. that of the two rays, into which any beam of light falling on the surface of such a substance was split, or of the two images of an object seen through it, *one* only was turned aside out of its *plane* and *extraordinarily* refracted, while the other followed the *ordinary* rule. Accordingly this was supposed to be the case; and not only so, but, from some trials and measurements purposely made by a philosopher of great eminence, it was considered to be a fact sufficiently established by experiment.

(23.) Perhaps we might have remained long under this impression, for the measurements are delicate, and the subject very difficult. But it has lately been demonstrated by an eminent French philosopher and mathematician, M. Fresnel, that, granting certain *principles* or postulates, all the phenomena of double refraction, including perhaps the greatest variety of facts that have ever yet been arranged under one general head, may be satisfactorily explained and deduced from them by strict mathematical calculation; and *that*, when applied to the cases first mentioned, these principles give a satisfactory account of the *want* of the extraordinary image; *that*, when applied to such cases as those of rock-crystal or Iceland spar, they also give a correct account of both the images, and agree in their conclusions with the rules before ascertained for them: but so far from coinciding with that part of the previous statement, which would make these conclusions extend to all crystallized substances, M. Fresnel's principles lead to a conclusion quite opposite, and point to a *fact* which had never been observed, viz. that in by far the greater number of crystallized substances which possess