X.—*On the Existence of Acari between the Laminæ of Mica in Optical Contact.*

By Sir DAVID BREWSTER, K.H., D.C.L., F.R.S. (Plate VI.)

(Read 28th April 1862.)

In searching for crystals of titanium between films of mica, I was surprised to observe something resembling the remains of insects. Upon submitting the specimen which contained them to a more careful examination, I found, in different parts of it, five completely formed Acari, all of which were much smaller than those found in cheese, brown sugar, and damp bran, specimens of which I obtained for the purpose of comparison.

The plate of mica, now on the table, which contains these five Acari, is about $5\frac{1}{4}$ inches long, 3 inches broad, and nearly the $\frac{1}{16}$ th of an inch thick. The distances of the Acari from the edges of the plate are 1·6 inch, 1·13, 0·4, 1·0, and 0·5. The largest of the Acari is about the $\frac{1}{67}$ th of an inch long, and the smallest the $\frac{1}{257}$ th of an inch.

The films of mica between which the Acari lie were in optical contact—that is, no light was reflected from their contiguous surfaces. This fact does not prove that the surfaces had never been separated; for we may partially lift one film of mica from another, so that light is reflected from the separated surfaces, and yet they will return into optical contact. This is true even in a more rigid substance, such as glass, where a crack or fissure, produced in a thick plate by heat, will reflect light at the separated surfaces, and will afterwards entirely disappear, sometimes after the lapse of a few seconds, and sometimes after a much longer interval, according as the surfaces have been more or less separated.*

That these Acari were introduced between the laminæ from without, cannot be a matter of doubt; but in what manner, and in what stage of their existence, I do not presume to conjecture.

When I first discovered these Acari, they were much more perfect than they are in the accompanying drawings—executed for me by the Hon. Mrs Ward—as will appear from the rude and highly magnified sketches of the largest, made by myself. They had obviously suffered compression during their carriage by post, or perhaps from the object-glass of the microscope having been accidentally forced upon the plate in the process of searching for them with high powers.

If the specimen of mica is thought of sufficient interest to be preserved in the Museum of the Society, with the drawings that are not engraved, it may be proper to mention, that in trying to obtain a better view of the Acarus in the centre of the plate, Mrs WARD detached a film, which she afterwards replaced with cement. This fact is mentioned on her rough sketch of the plate, lest it might be supposed that the Acarus at that place had been artificially introduced.

* See Philosophical Transactions, 1816, pp. 73, 74.

Fig. 1.

Fig. 2

Fig. 4.

Fig. 3.

Fig. 5.

Fig. 6.