IV.—*On a peculiar pasty form of Silica, from a cavity in Gold-bearing Quartz.*

By A. French.

THE alluvium over an area of about 50 square miles around Lead-hills in Lanarkshire, is auriferous. In many places the precious metal may be rendered visible after fifteen or twenty minutes washing with the primitive wooden trough employed by the local gold-seekers. Frequently nuggets have been found weighing from one to four or five pennyweights, and these are often either contained in pieces of loose quartz, or have quartz fragments attached to them; there are therefore good reasons to believe that the gold found in the red stratum of clay lying immediately above the rock has been derived from the numerous quartz veins which traverse the district.

The author was one day searching, along with some friends, for gold quartz *in situ*, and while examining a vein which crosses a gulch in the hills, called the "Gold Scars," found cavities in the quartz filled with a peculiar pasty substance, which appeared at first sight like minute scales of silver, which had been precipitated from a solution. Our first impression was that it was silver, but its behaviour in water soon cleared away the delusion; it rendered the water exceedingly turbid and white, and the suspended matter was a long time in settling. It consists of very minute scales of silica, somewhat lenticular in shape, their sizes vary from $\frac{1}{2000}$ to $\frac{1}{6000}$ part of an inch.

It is not attacked by hydrochloric or sulphuric acids, but is easily dissolved by hydrofluoric acid, and by a moderately dilute solution of sodium hydrate.

It is a rather remarkable feature of the Lead Hills district that the lead and gold bearing ground is bounded on four sides by particular kinds of quartz. On the southern boundary Lydian stone is found in great abundance. On the north at Abingten, red jasper prevails; towards Crawfordjohn on the west agates and cornelians are found, —these are sometimes of great beauty; and on the east near where this specimen of silica was found, calcedony is often found.

The whole field is contained within the Lower Silurian, the palæontology of the district is exceedingly meagre, but mineralogically it is very productive.

In the discussion which ensued on the reading of this paper some doubt was expressed as to the substance being really silica. Some members thought it was rather a sub-carbonate or other sub-salt of lead. I therefore requested Mr. Collins to test the small portion which I had previously placed in his hands for exhibition at the meeting.

He reports as follows:

"The quantity of material placed at my disposal was too small to allow of a proper chemical analysis by humid methods. I have, however, obtained very definite results by pyrologic tests. Thus, I found it unaltered in the closed tube, however strongly heated; it effervesced strongly when fused into a bead with carbonate of soda, and it remained insoluble in a bead of microcosmic salt. These results are quite sufficient to prove the presence of silica, and the absence of such bases as colour a bead of microcosmic salt. The absence of alumina was shewn by the nitrate of cobalt test. On the whole I see no reason to doubt that it is really silica as you say."