

On the Occurrence of an Aluminous Serpentine (Pseudophyte) with flint-like appearance near Kynance Cove.

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KYNANCE Cove lies in the midst of a Serpentine District. The Serpentine is associated with some little hornblende schist in the cove, and is traversed by black dykes both porphyritic and non-porphyritic from a few inches to several feet thick, by granitic veins, as also by veins of saussuritic gabbro, which latter, are, however, of rare occurrence on the western side of the Lizard.

When looking due east from the middle of Kynance Sands a rectangular block of white rock is seen in the dark red serpentine cliff from 70 to 80 ft. above the sea-level at low water, and about 200 yds. from the spectator. The vein that gives rise to this block can be easily reached by crossing the stream that enters the cove from the east, climbing the rising ground, and after reaching a ridge about 100 yds. from the stream, descending the grassy slope to the right to a point about 200 yds. south-east of Oliver's Refreshment House. Here, a few feet below the grass, a block of rock is seen 4 ft. high, 6 ft. through in front, and covered by broken serpentine behind. This block, which we will call No. 1, weathers in places an opaque white, like felspar, and in other places like broken flint. On fracturing it, some of the specimens obtained are found to be composed of a compact white substance, whilst others have the appearance of typical flint, from which they are easily distinguished by their softness. The opaque white rock is the hardest, and the flint-like rock the softest. This rock can be traced for 40 yds. running down the cliff in a south-south-east direction at an angle of about 18°. The serpentine has jointed out from the run of this vein, forming somewhat of a cleft, which renders the examination of the vein an easy matter. Twenty-five feet south-south-east of this block "No. 1" some more of the same rock is seen embedded in the light green soft decomposed serpentinous material which is so often associated with any disturbance in the serpentine of this district. The

vein then becomes nipped out for a few feet, to reappear in the form of blocks of flint-like rock varying in size downwards from $2\frac{1}{2}$ ft. long by 1 ft. thick, embedded in decomposed material as before. Sixty-four feet south-south-east of block "No. 1" we find the the large block "No. 2," which is so conspicuous an object from the sands. This block is 9 ft. long by 4 ft. thick, and lying behind it and connected with it is another block 2 ft. thick, which would indicate an original vein 6 ft. in thickness. The western face of this No. 2 block weathers like felspar, the rest weathers a dark colour. Some of the flint-like portions are translucent and of a greenish colour. These portions are much jointed, and in consequence of this the surfaces are roughened by angular projections. Some of the pieces broken from this block have the lighter and darker rocks in concentric layers, whilst others have alternate bands. A knife makes no impression on some of the opaque white rock, whilst some of the translucent rock yields to the nail. Fifteen feet beyond this "No. 2" block, the vein decreases to 1 ft. in width, and stones of flint-like rock are embedded in soft green material. Seven feet further on the vein forks and encloses a block of serpentine, the entire width of both veins and the included serpentine being about 2ft. Six feet further on the vein again branches, enclosing in its course masses of serpentine from $2\frac{1}{2}$ to 3 ft. thick; the lower branch of the vein is from 4 to 6 ins. thick, showing much decomposed rock surrounding the flint-like rock; the upper branch is 6 to 9 ins. thick, and contains much flint-like rock in serpentinous material. The branches of the vein can be traced from this point to a small recess or cave into the back of which the upper vein is seen to disappear, having a dip of about 35° east-north-east. The end of this vein is about 120 ft. south-south-east of block No. 1.

About 20 ft. below this cave a vein of very coarse-grained saussuritic gabbro may be traced for several yards running parallel to the flint-like vein. This gabbro vein is 15 ins. thick in one place, and thins away to nothing. The edges of the saussurite in this vein become in some places beautifully translucent and of a light green colour, and bear a resemblance to the translucent angular projections of the flint-like rock of block "No. 2," described above. In fact there is a passage of the saussurite into the flint-like substance which forms the subject of this paper. The gabbro has, however, no connection with the flint-like vein. Ten feet south west of this gabbro vein is a black dyke from 3 to 9 ins. thick running in a parallel direction. Further to the south, in the roof of a high cavern, an inaccessible oval block about 20 ft. long weathers in the same manner as the flint-like rock. Other black dykes occur here also.

There is one other exposure of the flint-like rock. In ascending the rising ground after crossing the stream that enters Kynance Cove from the east (already referred to), we find, a little more than half-way up, say about 50 yds. above the stream, that the foot-path through the grass has laid bare some feet of this flint-like rock. One specimen is very soft, and is scratched by the nail. It is associated with and apparently passes into opaque white rock which is not scratched by the knife. This exposure is in the trend of the flint-like vein, and about 100 yds. north-north-east of block No. 1.

Mr. Player kindly analysed the flint-like rock for Mr. Teall, who has furnished me with the following result and analyses of some pseudophytes which supply an interesting comparison with that of this rock.

	Pseudophyte.			
	I.	II.	III.	IV.
SiO ₂	33·3	33·51	34·63	35·31
Al ₂ O ₃	21·8	15·42	17·13	18·28
Fe ₂ O ₃	·4	—	—	1·26
FeO	—	2·58	1·61	·83
MgO	29·7	34·41	33·38	31·61
H ₂ O	14·9	13·21	13·93	13·26
	100·1	99·13	100·68	100·55
Sp. Gr.	2·57	2·61	2·58	2·61
	2·54			

I. Flint-like rock from Kynance.

II. Pseudophyte from Zdjár Mountain, near Aloysthal, Moravia.¹
(Hauer)

III. Greyish-green substance from Plaben, near Budweis.² (Drasche)

IV. Similar substance from Chyn, Bohemia.³ (Gintl)

¹ Dr. A. Kenngott, *Mineralogische Notizen Sitz. d. k. Akademie d. Wissenschaften. Wien.* Band XVII. (1855), p. 170.

² Dr. R. V. Drasche, Ueber eine pseudomorphe Bildung nach Feldspath. *Mineralogische Mittheilungen; Wien* 1873, p. 125.

³ Quoted from Rammelsberg *Handbuch der Mineral-Chemie.* 2nd edit. Leipzig, 1875.