## *Note on Schorlaceous Rocks from near St. Austell.*

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CERTAIN specimens of rock lately obtained by me from the "Single Rose" Clay Work, near St. Austell, Cornwall, examples of which are now submitted to the Society, illustrate well the processes by which, in some instances at least, granite has been transformed into an aggregate of quartz and schorl.

A comparison of the chemical composition of orthoclase from Roche with that of kaolin from the neighbouring district of St. Stephen's shows that in the passage of felspar into China clay there is approximately a loss of 26 per cent. $SiO_2$ and a gain of 19 per cent. $Al_2O_3$ and 12 per cent. $H_2O$. In the St. Austell district, the evolution of Gilbertite would appear to be one of the possible stages in the gradual disintegration and disappearance of granitic felspar: both its chemical composition and its mode of occurrence point to this conclusion.

| Orthoclase. Glass Mine, Roche (Phillips). | | Gilbertite. Stenna Gwynn (Lehunt). | | Kaolin. St. Stephen's (Boase). | |
|---|---|---|---|---|---|
| $SiO_2$ ... | 65·00 | $SiO_2$ ... | 45·15 | $SiO_2$ ... | 39·55 |
| $Al_2O_3$ ... | 19·00 | $Al_2O_3$ ... | 40·11 | $Al_2O_3$ ... | 38·05 |
| $Fe_2O_3$ ... | ·50 | FeO ... | 2·43 | MgO ... | 1·45 |
| CaO ... | 1·57 | MgO ... | 1·90 | $K_2O$ & loss | 8·70 |
| MgO ... | trace. | CaO .. | 4·17 | $H_2O$ ... | 12·30 |
| $K_2O$ ... | 10·37 | $H_2O$ ... | 4·25 | | |
| $Na_2O$ ... | 2·40 | | | | 100·05 |
| $H_2O$ ... | ·83 | | 98·01 | | |
| | 99·67 | | | | |

In this district the kaolinisation of the granite has, moreover, as perceptible in the specimens exhibited, been frequently associated with the production of schorl. This mineral has by degrees more or less completely pervaded the rock-mass, crystallising out in the minute cavities formed in it during the removal of constituents.

A synchronous and perhaps also slightly precursory stage of alteration is shown in the black highly schorlaceous rock in which the kaolin, with the exception of traces, has been removed from the cavities originally

occupied by crystals of orthoclase, and these have been filled with somewhat loosely cemented crystalline granules of quartz. The silicification of the rock, as the employment of a lens proves, must certainly have set in previous to the period of the full development of the schorl; for this latter mineral may be seen to have penetrated but little into the pseudomorphous quartz casts, and also to have formed a pretty well-defined line of demarcation about the same. It is, of course, open to conjecture whether the quartz is in part represented by silica once entering into the composition of the felspar that has disappeared.