PROCEEDINGS

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Liveingite, a new mineral from the Binnenthal.   By R. H. SOLLY, M.A., Downing College, with analysis by H. JACKSON, M.A., Downing College.

[*Abstract, read* 6 May 1901.]

This new mineral, to which I have given the name "Liveingite" in honour of the Professor of Chemistry, G. D. Liveing, F.R.S., is a new member of the group of sulpharsenites of lead which comprise Sartorite $PbS + As_2S_3$, Rathite $3PbS + 2As_2S_3$, Dufrenoysite $2PbS + As_2S_3$ and Jordanite $4PbS + As_2S_3$.

It crystallizes in the oblique system with a pseudo-rhombic habit, $\beta = 89° 45\frac{1}{2}'$.

The crystals consist of a twin aggregation, twinned about (100).

The twinning is beautifully shown by the iridescent tarnish they exhibit; one crystal has a green shade of colour, the other a red.

This difference in colour of two similar twinned crystals is well shown in Jordanite.

Through the kindness of Professor Liveing I have lately been able to make a few experiments on the artificial tarnishing of twinned crystals. The experiments made on Bournonite and Redruthite confirm the arrangement of tarnish observed in Liveingite and Jordanite.

The crystal habit is partially like Rathite and Sartorite.

The development of the dome zone resembles Rathite, while in the prism it resembles Sartorite. The pyramid zone has planes not found on either Rathite or Sartorite.

The prism zone exhibits oblique symmetry. I had only two crystals and the greater portion has been used by Mr Jackson in his analysis.

I am hoping to obtain this summer more material so as to be able to fully describe the crystallographic characters of this new mineral.

R. H. S.

The crystals were finely powdered and then examined in the manner described in a former publication (*Min. Mag.* XII. 289).

The amount of substance placed at my disposal was ·5 gram and this was used in the single estimation. The results obtained were

$$
\begin{aligned}
Pb &= 47\text{·}58 \\
S &= 24\text{·}91 \\
As &= 26\text{·}93 \\
\hline
&\ \ 99\text{·}42
\end{aligned}
$$

A small trace of Iron was present, but could not be estimated. The percentages required for a mineral having the formula $4PbS\,3As_2S_3$ are

$$
\begin{aligned}
Pb &= 48\text{·}75 \\
S &= 24\text{·}61 \\
As &= 26\text{·}64 \\
\hline
&\ 100\text{·}00
\end{aligned}
$$

H. J.