## MINERALOGY OF THE H. B. MINE, SALMO, B.C. 21

## GENERAL RELATIONSHIP OF ZINC PHOSPHATES

Till recently hopeite was the only natural zinc phosphate known to mineralogists. It 'ad been discovered at Moresnet nearly a century ago and till the discovery of this mineral in Rhodesia by Spencer in 1907 hopeite was known only from the original locality. Along with the hopeite from North-Western Rhodesia Spencer discovered two new phosphates of zinc—parahopeite and tarbuttite. The H. B. Mine is the third locality from which phosphates of zinc have been reported. All the previously known phosphates of zinc were found at this new locality except tarbuttite and in addition two new ones—spencerite, which occurs in great abundance, and hibbenite, which is described by Professor Phillips and appears to be very rare. The general chemical relationship of these minerals to one another is as follows:

 $\begin{array}{l} Hopeite &= Zn_3(PO_4)_2 + 4H_2O. \\ \hline Parahopeite &= Zn_3(PO_4)_2 + 4H_2O. \\ \hline Tarbuttite &= Zn_3(PO_4)_2 + Zn(OH)_2 \\ \hline Triclinic \\ Spencerite &= Zn_3(PO_4)_2 + Zn(OH)_2 + 3H_2O \\ \hline Monoclinic \\ \hline Hibbenite \\ = 2Zn_3(PO_4)_2 + Zn(OH)_2 + 6 \\ \hline H_2O \\ \hline Rhombic \\ \hline \end{array}$ 

From the chemical point of view all these minerals are remarkable for their unusual purity and the general absence of all chemical elements not in accord with the above formulae.

## THE CLAY CRUST OF STALACTITIC MASSES

Outside the calamine shell which surrounds the central core of phosphate is a deposit of clay which is grey to cream in colour. This material which is not plastic was referred to by one of the miners who wrote to Professor Phillips as "very phosphatic clay which carried 20 per cent. zinc and buried in the clay were great chunks of ore". The analysis given below (1) shows that the material examined by me is not particularly phosphatic but that in the zinc content it is comparable to the material mentioned above.

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