NOTES AND NEWS

GOLDSCHMIDTINE IDENTICAL WITH STEPHANITE

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Goldschmidtine was recently described (1939) as a new mineral occurring at Andreasberg, Harz, in orthorhombic crystals with the composition \( \text{Ag}_2\text{Sb} \). To test the homogeneity of the crystals two polished sections were made, one of a typical crystal group, the other of a portion of the sample of crystal fragments used for the analysis. These sections showed only one mineral. X-ray powder photographs on samples drilled from the sections gave a pattern unlike that of dyscrasite—\( \text{Ag}_2\text{Sb} \)—the name attached to the specimen on which the orthorhombic crystals were found.

More recently Dr. G. A. Harcourt of the International Nickel Company wrote me that he had re-examined the polished sections and powder photographs of goldschmidtine and had found that they are indistinguishable from sections and photographs from two specimens of stephanite—\( \text{Ag}_2\text{SbS}_4 \) from Freiberg, Saxony. Dr. Harcourt also pointed out that the remaining properties given for goldschmidtine agreed with those of stephanite, except the specific gravity and the composition. The corresponding essential data compare as follows:

<table>
<thead>
<tr>
<th>GOLDSCHMIDTINE</th>
<th>STEPHANITE</th>
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</thead>
<tbody>
<tr>
<td><strong>Analysis</strong></td>
<td><strong>Ideal</strong></td>
</tr>
<tr>
<td>Ag</td>
<td>64.78</td>
</tr>
<tr>
<td>Sb</td>
<td>35.01</td>
</tr>
<tr>
<td>S</td>
<td>0.06</td>
</tr>
<tr>
<td>( a:b:c )</td>
<td>0.6312:1:0.6860</td>
</tr>
<tr>
<td>( a_0, b_0, c_0 )</td>
<td>7.75, 12.32, 8.42 all ( \pm 0.05 ) Å</td>
</tr>
<tr>
<td>( a_0:b_0:c_0 )</td>
<td>0.629:1:0.683</td>
</tr>
<tr>
<td>Twin plane</td>
<td>(110)</td>
</tr>
<tr>
<td>Hardness</td>
<td>2½</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>6.83</td>
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</table>

Dr. Berman kindly redetermined the specific gravity of goldschmidtine with the torsion micro-balance, which was not available when the material was first studied; the new values, 6.26, 6.27, lie within the range given for stephanite. A new analysis on a small sample of clean crystals of goldschmidtine, by the International Nickel Company, yielded: \( \text{Ag 68.1, Sb 14.4, S 15.6} \pm 0.1 \); total 98.1, in good agreement with the compo-
sition of stephanite. It is clear, therefore, that the mineral described as
goldschmidtine is in fact stephanite and that the name goldschmidtine
must be withdrawn. By an unlucky chance a faulty analysis was compen-
sated by an inaccurate specific gravity, giving an integral cell content
and thus concealing the errors.

Since the mineral described as goldschmidtine is stephanite some points
of interest may be salvaged from the description. The morphology of
stephanite is in fair agreement with that attributed to dyscrasite in the
older literature, but it bears no simple relation to the hexagonal struc-
ture found by Machatschki (1928) for natural and artificial dyscrasite.
This suggests that the early measurements supposed to represent dys-
"crasite were actually made on associated crystals of stephanite.

In addition to the common and very evident twinning on (110) the
crystals from Andreasberg show symmetrical striations on {110} suggest-
ging twinning on (001). This twin law is established on stephanite
which is therefore referred to the pyramidal class—mm2. Evidence was
also found (Figs. 6 and 7) for twinning on (100). The absence of two sym-
metry planes limited the symmetry to the disphenoidal class—222. The
x-ray extinctions noted, hkl with h + k odd, 00l with l odd, are the same
as those given for stephanite by Salvia. In the class 222 these extinctions
admit only one space group, C2221, which thus appears to be confirmed.

However, a new set of x-ray measurements on stephanite, recently
made in this laboratory by Mr. E. D. Taylor of Laval University, re-
vealed a further extinction condition which gives a unique space group
in the class mm2 but is not compatible with the class 222. Without an-
ticipating Mr. Taylor’s interesting results, to be given in a forthcoming
paper, the geometrical and röntgenographic results are reconciled by the
following consideration, for which I am indebted to Professor J. D. H.
Donnay: twinning on any one of the missing elements of symmetry in
either of the merohedral orthorhombic classes gives one and the same
twin orientation, and therefore the merohedral classes (mm2 and 222)
cannot be distinguished by such twinning alone.

REFERENCES

VERBA, C. (1886): Data from Dana, System, 143 (1892).