



XLVI. Notice of crystallographical forms of glaucodote

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XLVI. *Notice of Crystallographical Forms of Glaucodote.* By
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Mineral Department, British Museum* *.

[Plate I.]

THE mineral from Håkansbo in Sweden is found in large crystals of metallic lustre and dull tin-white colour, imbedded in towanite and pyrites. The crystals are, for the most part, twins, most of them being twinned about the normal to the face (0 1 1), so far not described, some about the normal to the prism-face (1 1 0). The specific gravity and the prism-angle agree fairly well with those of Breithaupt's acontite.

	Glaucodote.	Acontite (Br.).
Sp. gr.	5.985-6.18.	6.008-6.059.
Prism-angle . . .	69° 32'	69° 31'
Brachydome-angle .	100 2	102 0

The one discrepancy consists in the value of the angle of the brachydome {1 0 1}, which from direct observation and a calculation by the method of least squares involving all the best angles measured, I make out to be 100° 2'. The angle of the prism varies considerably in different crystals—68° 57', 69° 6½', 69° 13', 69° 32', 69° 40' having been obtained on fairly good specimens. The planes of the brachydome are much striated, and do not allow of such precise determination. Differences in the brachydome-angle, such as those found in the prism-angle, have been observed, though much more limited in extent. This variation of the crystallographic elements of the mineral is probably to be accounted for by a variation of the quantity of cobalt present. The angle of the prism (=67° 24') and the cleavage *c*, given in Miller's 'Mineralogy,' seem to belong to some other mineral. They were not determined by Professor Miller himself; and I have been unable to find out whence they are taken. On the very large crystals are found the forms {0 1 0}, {1 1 0}, {1 0 1}, {1 0 2}, {0 1 1}; on smaller crystals have been found the additional forms, {1 1 1}, {1 2 2}, {2 0 1}. Fig. 1 (Plate I.) is a stereographic projection of these forms. Such simple crystals as I have observed were extended considerably in the direction of the edge of the brachydome, but were all broken at one end. On one of these, whose prism-angle measured 69° 19½', a second prism {1 6 0} was observed. Its faces were small and not well developed. Assuming the measured angle 69° 19½' for the fundamental

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prism, calculation gives the angle $(110, 160) = 27^\circ 56\frac{1}{4}'$, which agrees very well with that obtained by measurement, $27^\circ 54\frac{1}{2}'$.

The elements and angles given below have been taken from measurements obtained on two good twin-crystals, each about the size of a cherry.

System prismatic :

$$D = (010, 011) = 30^\circ 12\frac{1}{3}'; \quad E = (001, 101) = 50^\circ 1';$$

$$F = (100, 110) = 55^\circ 14'.$$

$$a : b : c = 1.4406 : 1 : 1.71784.$$

Forms observed:

$$b\{010\}, m\{110\}, y\{201\}, l\{101\}, s\{102\}, n\{011\}, \\ o\{111\}, w\{122\}, p\{160\}.$$

	Calculated.	Found.
$mm,$	$69^\circ 32'$	$69^\circ 32'$
$ll,$	$100^\circ 2'$	$100^\circ 1'$
ls	$19^\circ 12\frac{3}{4}'$	$19^\circ 0'$
ly	$17^\circ 14'$	$17^\circ 13'$
$yy,$	$134^\circ 30'$	$134^\circ 31\frac{1}{2}'$
$ly,$	$62^\circ 44'$	$62^\circ 43\frac{2}{3}'$
my	$58^\circ 16\frac{1}{2}'$	$58^\circ 15'$
ml	$64^\circ 5\frac{1}{2}'$	$64^\circ 4\frac{1}{2}'$
nw	$16^\circ 42'$	$16^\circ 43\frac{1}{2}'$
$ww,$	$33^\circ 24'$	$33^\circ 27'$
ow	$14^\circ 15\frac{2}{3}'$	$14^\circ 7'$
mn	$44^\circ 46'$	
nl	$71^\circ 8\frac{1}{3}'$	
$m\mu$	$89^\circ 32'$	$89^\circ 36'$
$m\lambda$	$26^\circ 22\frac{1}{3}'$	$26^\circ 32'$

The observed angles agree fairly well with those obtained by calculation, with the exception of ls and $m\lambda$. The observation of the latter was one of no great weight; but the former was repeatedly measured with great care. As moreover an increase of $5'$ in the angle E involves an increase in ls of $\frac{3}{4}'$ only, I have been obliged to regard the discrepancy as due to a distortion of the face s in the crystal on which the angle was measured. This face s , though large, is generally one of the worst on the crystal. The plane n is but poorly developed, and therefore does not serve for a direct determination of the element D . The plane b is deeply striated parallel to its intersection with m ; the planes l and s are striated parallel to their intersections with one another, s being much the rougher.

The planes y are pitted and rough. Figs. 2 and 3 are representations of simple crystals.

The twins about (011) are a fresh illustration of the tendency to twin about the face of a prism whose angle is near 60° . Fig. 4 is a representation of this twin, in which both members are shown approximately *in æquilibrio* with the twin-axis vertical. Fig. 5 represents somewhat closely the appearance of a moderately large twin of this kind. The principal crystal, denoted by Roman letters, is projected in the same way as in fig. 1; and to it are attached two smaller crystals twinned about (110) , the one represented by Greek letters, the other by barred Greek letters. The intersection of planes which correspond is straight and definite, of planes which do not correspond (as s and μ) is irregular and indefinite. The elements obtained by measurements on this crystal differ slightly from those given above, as is shown by the following Table:—

	Calculated.	Found.
D	$=30^\circ 14\frac{1}{2}$	
E	$50^\circ 2\frac{3}{4}$	
F	$55^\circ 10'$	
$mm,$	$69^\circ 40'$	$69^\circ 38\frac{1}{2}'$
$ss,$	$61^\circ 40'$	$61^\circ 34\frac{1}{2}'$
ls	$19^\circ 12\frac{3}{4}'$	$19^\circ 14\frac{3}{4}'$
ml	$64^\circ 2'$	$64^\circ 1\frac{1}{2}'$
ms	$72^\circ 58\frac{1}{2}'$	$72^\circ 53'$
$m\mu,$	$48^\circ 50\frac{1}{3}'$	$48^\circ 59'$

One specimen in the British Museum consists of a triple twin, resembling those of chrysoberyl, two of the members being twinned on adjacent faces of the form $\{011\}$ of the third. Fig. 6 is an orthogonal projection on the plane (100) of this twin, in which an attempt has been made to show the appearance of the specimen and the relative magnitude of the members. Fig. 6a shows the simple crystal in the same projection.

Twins about the face of the prism $\{110\}$ have been already observed. These twins generally show the tendency to develop but slightly in the direction of the twin axis; and I was fortunate enough to get a specimen showing this to a remarkable degree. It is about the size of a penny-piece, and about the thickness of the thick penny of George III. One member is about half the width of the other, the remainder being apparently untwinned without an increase of its thickness. Close inspection, however, shows the existence of twin laminae in this part.

Fig. 1.

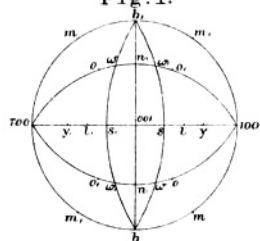


Fig. 2.

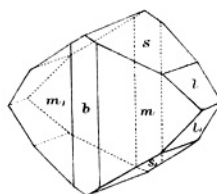


Fig. 3.

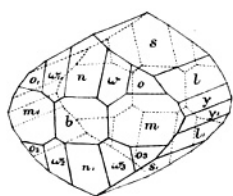


Fig. 4.

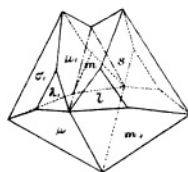


Fig. 5.

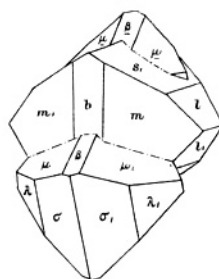


Fig. 6.

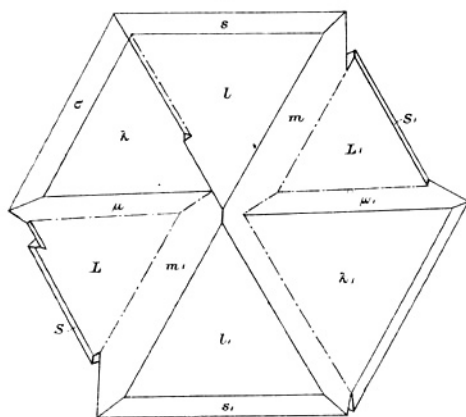


Fig. 6a.

