

Two crystals were measured. These showed the forms  $c = 0(001)$ ,  $b = 0\infty(010)$ ,  $u = \infty 2(120)$ ,  $e = 01(011)$ ,  $o = 02(021)$ ,  $x = 1(111)$ ,  $s = 12(121)$ ,  $d = 0\frac{1}{3}(013)$ , and  $A^* = 04(041)$ . The element was determined afresh. This determination, from nine faces, gave an average value for  $p_0 = c = 1.0883$ , which is in close agreement with that of the Montepioni crystals, which show  $p_0 = c = 1.0889$ .<sup>1</sup>

Crystal 1 is represented in Fig. 26, as closely as possible in its natural development, in plan and perspective. The dimensions of this crystal are  $10 \times 10 \times 45$  mm. Crystal 2 has the dimensions  $5 \times 10 \times 15$  mm. Both crystals show the same combination of faces, as well as the same arrangement of the faces in the order of magnitude. The forms  $b$ ,  $c$ ,  $x$ , and  $o$  are the most prominent ones, while  $d$  and  $A$  are subordinate.

The form  $A = 04(041)$  is a new form. It was found on crystal 1 and shows two faces on that crystal, which yielded the following angles:

	Symbol	$\phi$	$\rho$
Measured.....	A.....	{ 180° 01'	77° 15'
		{ 270° 02'	77° 20'
Calculated.....	A.....	{ 180° 00'	77° 06'
		{ 270° 00'	77° 06'

The form is thus verified.

LISTS OF THE TETRAGONAL MINERALS INCLUDED IN GOLDSCHMIDT'S WINKELTABELLEN. EDGAR T. WHERRY. *Washington, D. C.*—The tetragonal minerals included in the Winkeltabellen are here arranged in the order of increasing value of  $p_0 (= c)$ . This arrangement may be useful for determinative purposes:—measurement of  $p_0$  on an unknown crystal will enable it to be placed in a certain position in the series, and its identity with one of the minerals falling near that position can usually be readily established. In case the form taken as first order in measuring the unknown happens to have been taken as second order in calculating the angle-table, however, the value of  $p_0$  obtained will have to be divided (or multiplied) by  $\frac{1}{2}\sqrt{2}$  in order to place the unknown. For instance, suppose an unknown crystal, actually chalcopyrite, were measured in Dana's orientation, it would show  $p_0 = 0.98 \pm$ ; search in the table would show near this value only edingtonite and arksutite, with neither of which the unknown would agree in physical features. On dividing the value obtained by 0.7071, however, the result would be  $1.38 \pm$ ; and on looking at the corresponding portion of the table, chalcopyrite would soon be located.

Supplementary lists give the tetragonal minerals which have been found to show diminished symmetry.

<sup>1</sup> V. Goldschmidt. *Z. Kryst. Min.*, 21, 327, 1893; 23, 147, 1894; *Winkeltabellen*, 265, 1897.

TETRAGONAL MINERALS

	p <sub>0</sub> = c	Page		Page
Tin (Zinn).....	0.3857	375	(Arksutite) [Chiolite]....	1.0150 54
Wernerite.....	0.4400	319	Romeite.....	1.0257 295
Melilite (Humboldtith).....	0.4548	180	Chiolite.....	1.0418 94
Vesuvianite (Idokras)....	0.5376	187	Hauchecornite.....	1.0521 171
Gehlenite.....	0.5658	155	Pinnoite.....	1.0761 267
Mursinskite.....	0.5664	414	Phosgenite.....	1.0889 265
(Alvite) [= var. of zircon].....	0.6370	35	Hausmannite.....	1.1554 172
Zircon (Zirkon).....	0.6403	379	Apophyllite.....	1.2515 51
Thorite.....	0.6405	343	(Reinite) [a pseudom.]....	1.2790 294
Rutile.....	0.6442	307	Zeunerite.....	1.2880 371
Tapiolite.....	0.6464	338	Loewite (Löweit).....	1.3040 223
Trippkeite.....	0.6477	351	Eosite.....	1.3778 128
Meliphanite			Chalcopyrite (Kupferkies).....	1.3933 206
(Melinophan).....	0.6584	237	Braunite.....	1.4032 78
Sellaite.....	0.6596	315	(Sipyilit) [= variety of	
(Belonesite) [Sellaite]....	0.6605	64	fergusonite].....	1.4500 319
Polianite.....	0.6647	269	Fergusonite.....	1.4641 144
Cassiterite (Zinnerz)....	0.6723	375	Torbernite (Kupferuranit).....	1.4691 209
Plattnerite.....	0.6764	417	Scheelite.....	1.5360 312
Ganomalite.....	0.7070	154	Powellite.....	1.5445 272
Mellite.....	0.7463	237	Stolzite.....	1.5606 329
Heldburgite.....	0.7500	173	Wulfenite.....	1.5774 368
Xenotime.....	0.8757	370	Calomel (Kalomel).....	1.7229 195
Sarcosite (Sarkolith)....	0.8872	311	Matlockite.....	1.7630 233
Edingtonite.....	0.9530	122	Octahedrite (Anatas)....	1.7771 39

REPRESENTATIVES OF CLASSES WITH DIMINISHED SYMMETRY

CLASS PYRAMIDAL

Wernerite.....	0.44
Sarcosite.....	0.89 -
Pinnoite.....	1.08 -
(Sipyilit).....	1.45
Fergusonite.....	1.46 +
Scheelite.....	1.54 -
Powellite.....	1.54 +
Stolzite.....	1.56

CLASS PYRAMIDAL-HEMIMORPHIC

Wulfenite.....	1.58 -
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CLASS TRAPEZOHEDRAL

Phosgenite.....	1.09
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CLASS SPHENOIDAL

Chalcopyrite.....	1.39 +
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CLASS TETARTOHEDRAL

Meliphanite.....	0.66 -
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ERRONEOUSLY CLASSED AS

TETRAGONAL

Edingtonite.....	Orthorhombic
Romeite.....	Isometric