### TABLE 3

**Table to show Method of Calculation of Angles**

(See Winkeltabellen, pp. 18, 19 & 19a).

<table>
<thead>
<tr>
<th>Mineral Higginsite</th>
<th>Let. Symb.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elements</td>
<td>pq</td>
<td>lg p</td>
<td>lg q</td>
<td>lg x = lg p + 1</td>
<td>lg y = lg q + 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= 1.272</td>
<td>= 1.272</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= 0.10449</td>
<td>= 0.10449</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= 0.7940</td>
<td>= 0.7940</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= 0.989982</td>
<td>= 0.989982</td>
</tr>
<tr>
<td></td>
<td>o1</td>
<td>0</td>
<td>0</td>
<td>0.010449</td>
<td>0.989982</td>
</tr>
<tr>
<td></td>
<td>p+1</td>
<td>969897</td>
<td>0</td>
<td>0.980346</td>
<td>0.989982</td>
</tr>
<tr>
<td></td>
<td>r+2</td>
<td>017609</td>
<td>030103</td>
<td>0.028058</td>
<td>0.020085</td>
</tr>
</tbody>
</table>

- **LISTS OF THE ORTHORHOMBIC MINERALS INCLUDED IN GOLDSCHMIDT'S WINKELTABELLEN.**
  **EDGAR T. WHEELEY, WASHINGTON, D. C.**—As the prism zone is on the whole most characteristic of orthorhombic crystals, it has seemed desirable to arrange the minerals of this system in the order of increasing values of axis a.

#### Orthorhombic Minerals

<table>
<thead>
<tr>
<th>Mineral</th>
<th>a</th>
<th>c</th>
<th>Page</th>
<th>a</th>
<th>c</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranophanite</td>
<td>0.31</td>
<td>1.01</td>
<td>355</td>
<td>0.53</td>
<td>0.95</td>
<td>346</td>
</tr>
<tr>
<td>Polycrasite (Polycras)</td>
<td>0.35</td>
<td>0.31</td>
<td>271</td>
<td>0.53</td>
<td>1.17</td>
<td>274</td>
</tr>
<tr>
<td>Euxenite</td>
<td>0.36</td>
<td>0.30</td>
<td>137</td>
<td>0.53</td>
<td>0.88</td>
<td>266</td>
</tr>
<tr>
<td>Molybdate</td>
<td>0.39</td>
<td>0.47</td>
<td>243</td>
<td>0.54</td>
<td>1.02</td>
<td>191</td>
</tr>
<tr>
<td>Columbite</td>
<td>0.40</td>
<td>0.36</td>
<td>101</td>
<td>0.54</td>
<td>2.91</td>
<td>391</td>
</tr>
<tr>
<td>Omnerécite (An-nerödit)</td>
<td>0.40</td>
<td>0.36</td>
<td>45</td>
<td>0.55</td>
<td>0.52</td>
<td>309</td>
</tr>
<tr>
<td>Flinkite</td>
<td>0.41</td>
<td>0.74</td>
<td>147</td>
<td>0.56</td>
<td>0.73</td>
<td>232</td>
</tr>
<tr>
<td>Monticellite</td>
<td>0.43</td>
<td>0.58</td>
<td>253</td>
<td>0.57</td>
<td>0.60</td>
<td>64</td>
</tr>
<tr>
<td>Fayalite</td>
<td>0.46</td>
<td>0.58</td>
<td>252</td>
<td>0.57</td>
<td>0.47</td>
<td>180</td>
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<tr>
<td>Tephroite</td>
<td>0.46</td>
<td>0.59</td>
<td>254</td>
<td>0.57</td>
<td>0.55</td>
<td>66</td>
</tr>
<tr>
<td>Hjelmite</td>
<td>0.46</td>
<td>1.03</td>
<td>177</td>
<td>0.58</td>
<td>3.20</td>
<td>161</td>
</tr>
<tr>
<td>Olivine</td>
<td>0.47</td>
<td>0.59</td>
<td>251</td>
<td>0.58</td>
<td>0.67</td>
<td>49</td>
</tr>
<tr>
<td>Ardenite</td>
<td>0.47</td>
<td>0.31</td>
<td>53</td>
<td>0.58</td>
<td>0.57</td>
<td>318</td>
</tr>
<tr>
<td>Chrysoberyl</td>
<td>0.47</td>
<td>0.58</td>
<td>97</td>
<td>0.58</td>
<td>0.55</td>
<td>318</td>
</tr>
<tr>
<td>Aeschynite</td>
<td>0.48</td>
<td>0.67</td>
<td>31</td>
<td>0.58</td>
<td>0.97</td>
<td>330</td>
</tr>
<tr>
<td>Diaphorite</td>
<td>0.49</td>
<td>0.73</td>
<td>115</td>
<td>Chalocite (Kupferblende)</td>
<td>0.58</td>
<td>0.97</td>
</tr>
<tr>
<td>Pyrostilpnite (Feuerblende)</td>
<td>0.50</td>
<td>0.70</td>
<td>145</td>
<td>0.58</td>
<td>0.58</td>
<td>329</td>
</tr>
<tr>
<td>Wavellite (old data)</td>
<td>0.50</td>
<td>0.38</td>
<td>362</td>
<td>0.58</td>
<td>0.84</td>
<td>329</td>
</tr>
</tbody>
</table>
Caracolite...........0.58 0.42 88  
Iolite (Cordierit)......0.59 0.56 103  
Niter (Kailispalpeter) ...0.59 0.70 194  
Bromite (Alstonit)......0.59 0.74 34  
Cotunnite.............0.59 1.19 105  
Fischerite.............0.59 -- 147  
Carnallite............0.60 1.39 88  
Friesite..............0.60 0.74 153  
Thenardite............0.60 1.25 341  
Orpiment (Auripigment)......0.60 0.67 57  
Witherite.............0.60 0.73 365  
Euchroite.............0.61 1.04 133  
Strontianite...........0.61 1.04 331  
Cerussite.............0.61 0.72 89  
Schockingerite........0.61 -- 313  
Zoisite..............0.62 0.34 379  
Aragonite.............0.62 0.72 51  
Stephanite (Melanglanz)......0.63 0.69 233  
Kentrolite............0.63 0.90 197  
Desclaozite.........0.64 0.80 113  
Polylahde............0.64 -- 270  
Variscite............0.65 -- 358  
Nesquehonite.........0.65 0.46 248  
Atacamite (Atakaumis)....0.66 0.75 56  
Lawsonite.............0.67 0.74 216  
Ilvaite (Lievrit)......0.67 0.44 220  
Locellinit (Löllinit)......0.67 1.23 223  
Lithargite (Bleiox)....0.67 0.98 72  
Sudsteite.............0.68 0.45 333  
Arsenopyrite (Arsen- 
kies)................0.68 1.19 55  
Glaucodotite (Glau- kodot)..........0.69 1.19 169  
Acanthite (Akanthin)....0.69 0.99 32  
Erythrosiderite......0.69 0.72 132  
Staurolite...........0.69 0.98 327  
Epigenite............0.69 -- 131  
Tungsite.............0.70 1.61 352  
Hydroxyanite........0.71 1.26 186  
Polymagnite...........0.71 0.51 271  
Hastigite............0.71 1.01 171  
Lauronit.............0.73 0.83 214  
Alloclasite (Alloklas)....0.74 0.55 34  
Klaprothite...........0.74 -- 199  
Marcasite (Marka- sit)..........0.76 1.21 232  
Euchlorite............0.76 1.88 133  
Fluellite.............0.77 1.87 148  
Eosphorite............0.78 0.52 128  
Brochantite...........0.78 0.49 393  
Childrenite...........0.78 0.53 93  
Celestite (Colestim)....0.78 1.28 98  
Calamine, Hemimor- phite (Kieselzink- erz)................0.78 0.48 197  
Lecontite.............0.78 1.53 218  
Valentinite...........0.79 1.41 357  
Anglesite.............0.79 1.20 42  
Langite..............0.79 0.42 212  
Davestite............0.79 0.48 112  
Hambbergite...........0.80 0.78 169  
Chalcostibite (Wolfsbergit)......0.80 0.63 307  
Mendipite.............0.80 -- 237  
Sulfur (Schwefel)......0.81 1.91 313  
Barite (Baryt)........0.82 1.31 60  
Bismite (trigonal?)....0.82 1.60 70  
Jamesonite...........0.82 187  
Thermonatriite........0.83 0.81 341  
Pinskiiolite...........0.83 0.59 267  
Hajenderite...........0.84 0.99 108  
Prehnite..............0.84 1.12 272  
Brookite..............0.84 0.94 80  
Manganite.............0.84 0.54 230  
Kornrurupite...........0.85 200  
Serpierite............0.86 1.36 316  
Prismatite............0.86 0.83 273  
Mazapilite............0.86 0.99 233  
Strengite............0.87 0.98 330  
Scorodite (Skorodit)....0.87 0.96 321  
Triplylhe............0.87 1.05 350  
Enargite.............0.87 0.82 127  
Dufrenite (Kraurit)....0.87 0.43 201  
Pseuobrookite........0.87 0.89 274  
Nadorite..............0.89 1.35 245  
Zinkosite.............0.89 1.41 374  
Anhydrite.............0.89 1.01 44  
Spodiosite............0.89 1.58 325  
Zinckenite............0.90 1.14 372  
Ochrolite.............0.91 2.01 250  
Hematite (Häma- 
hibrit)..............0.91 1.74 68  
Reddingite............0.91 1.05 293  
Tellurite.............0.92 0.95 339  
Caledonite............0.92 1.41 87  
Danburite.............0.92 0.88 108  
Goethite (Göttit)......0.92 0.61 162  
Cossitite.............0.92 1.46 104  
Synadelphite...........0.92 1.72 337  
Gerhardit.............0.92 1.16 156  
Stilbite (Desmin)......0.93 0.76 113  
Diasporeitte...........0.94 0.60 116  
Bournonite............0.94 0.90 76  
Dufrenoyelite........0.94 1.33 120  
Krennerite............0.94 0.51 202  
Stylonitite............0.94 -- 331  
Meneghinite..........0.95 0.69 238  
Olivenite.............0.95 0.68 251  
Lanthanite............0.95 0.90 213  
Uranothallite........0.95 0.78 355  
Newberyite............0.95 0.94 249  
Sartorite (Sklero- klas)..........0.96 0.77 320  
Libethenite...........0.96 0.70 220  
Empieclite (Empel-ikit)........0.96 0.77 126  
Bismuthinite (Wis- muthglanz)........0.97 0.99 364  
Adamite..............0.97 0.72 30  

Representatives of Classes with Diminished Symmetry

Class Hemimorphic

Struvite 0.55 0.62 Calamine, hemimorphite 0.78 0.48
Bertrandite 0.57 0.60 Prehnite 0.84 1.12

Class Sphenoidal

Epsomite 0.99 0.57
Leucophanite 0.99 0.67
Edingtonite 1.0 0.95

Peri-orthorhombic

Mica group Monoclinic
Polybasite Monoclinic

Notes and News

A Calcium Phosphate with Ratios Between Those of Triplite and Sarcopside. Edw. F. Holden. Hillsboro, N. H.—In the writer’s note on sarcopside in the May number of this magazine (pages 99–102), the formula-types of the various fluo-phosphates and related minerals were compared, in table 3; it was also noted in discussing that table that a ferrous fluophosphate from Stoneham, Maine, has been found to show a composition lying approximately midway between the sarcopside and apatite ratios, R:(F, OH):(PO₄) = 12:3:7. The purpose of the present note is to call attention to another apparently intermediate mineral, also from Stoneham, the analysis of which is given (as a peculiar “apatite”) in U. S. Geol. Survey Bull 591, p. 349. The ratio derivable from this analysis is 11:6:4, which is 2 of the way from sarcopside to triplite (7:2:4 + 2 × (2:1:1) = 11:6:4). The chief base in this mineral is calcium, so the member of the triplite group concerned is spodiosite; but the properties of the Stoneham mineral are so unlike those ascribed to spodiosite as to make its distinctness seem at least possible. Studies of the optical properties, with special reference to homogeneity, of minerals appearing to occupy intermediate positions in the series are necessary, however, before their status can be settled.