

To illustrate the use of these tables, find the three values of φ and ρ for the form (123). (See above, hexoctahedron, page 114).

$\frac{p}{n} \frac{q}{n}$	$p : q$	φ (p. 25)	$\log \frac{1}{n} \sqrt{p_2 + q_2}$ (p. 22)	$\log \tan \rho$	ρ
$\frac{1}{3} \frac{2}{3}$	1 : 2	26° 34'	$\log \frac{1}{3} \sqrt{5}$	9.87236	36° 42'
$\frac{1}{2} \frac{3}{2}$	1 : 3	18 26	$\log \frac{1}{2} \sqrt{10}$	0.19897	57 41
2 3	2 : 3	33 41	$\log \sqrt{13}$	0.55697	74 30

ILLUSTRATION OF THE ISOMETRIC SYSTEM.—
PYRITE FROM FALLS OF FRENCH CREEK, PA.

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Pyrite is an abundant mineral at the Falls of French Creek iron mine, and the remarkable elongated octahedral crystals formerly found there have been studied in detail by Penfield.¹ These occurred embedded in calcite; and the majority of the crystals found in that association are simple octahedral in habit, with but rarely small faces of other forms. The crystals which occur implanted on the crusts of magnetite are, however, of an entirely different habit. In them the cube is dominant, but there are also prominent faces of a rather flat diploid, and smaller ones of many other modifying forms. The cube faces are usually curved, often decidedly wavy, and more or less dulled by etching. Reaching a maximum diameter of a centimeter or more, and occurring in groupings often thickly scattered over the brilliant black magnetite, these pyrites yield striking mineral specimens, and they seem worthy of description, even though they show no new nor even unusual forms for the mineral.

Two of these crystals² were mounted and studied on the Goldschmidt two-circle goniometer as described in preceding papers in this series. They were oriented by means of the smoothest cube faces which could be found on each. The most brilliant faces present prove to be the quadrilateral-faced trisoctahedron or trapezohedron, (211); the dominant diploid, which proves to be (421), comes next in order of brilliance, closely followed by the cube (100). The faces of the remaining forms are relatively dull, curved, or otherwise imperfect.

¹ *Am. J. Sci.* [3], 37, 209, 1889.

² Kindly loaned by Mr. S. G. Gordon.

TABLE 1

ANGLES OF FORMS PRESENT ON PYRITE FROM FALLS OF FRENCH CREEK

Forms		Symbols		Description	Observed		Calculated	
No.	Let-ter	Gdt.	Mill.		φ	ρ	φ	ρ
2	e	∞2 21 ½	120 211 112	Striated, irregular	90 00	90 00	90 00	90 00
3	n	12 ½ 12	121 112 121		Brilliant, well de- veloped	0 00	26 30	0 00
4	w	½ 2 48	148 184 481	Minute, curved		0 00	63 30	0 00
5	t	½ 2 24	142 142 241		Brilliant, but some- what wavy	26 30	90 00	26 34
6	H ₁	½ 4 4 34	134 143 341	Minute, curved; present on one crystal only		63 29	65 58	63 26
						45 00	35 20	45 00
					26 32	65 58	26 34	65 54
					14 00	27 00	14 02	27 16
					7 00	63 00	7 07	63 36
					26 00	83 00	26 34	83 37
					26 30	29 10	26 34	29 12
					14 08	64 02	14 02	64 07
					26 40	77 14	26 34	77 23
					18 00	40 00	18 26	38 19
					15 00	54 00	14 02	53 57
					36 00	80 00	36 52	78 41

LISTS OF THE ISOMETRIC MINERALS INCLUDED IN GOLD-SCHMIDT'S WINKELTABELLEN. EDGAR T. WHERRY. *Washington, D.C.*—In the Winkeltabellen the minerals are arranged alphabetically, the crystal system and class being given below each. This makes it easy to locate any desired mineral—a table of synonyms aiding the finding of those included under one name, but sought under another. It is often interesting, however, in connection with various crystallographic studies, to have brought together minerals showing similarity in crystallization. The following grouping of the hundred isometric minerals included in the tables therefore seems worth publishing. The arrangement on the basis of classes and habits needs no explanation. The lists do not pretend to be complete in the sense of covering every mineral known or supposed to crystallize in this system, but they do include practically all which occur in really well developed crystals.

CLASS HOLOHEDRAL

DOMINANT HABIT CUBIC

Copper (Kupfer) Cu	204	Beegerite Pb ₅ Bi ₂ S ₉	Page 64
Iron (Eisen) Fe	122	Halite (Steinsalz) NaCl	327
Platiniferous Iridium Ir, Pt	193	Cerargyrite (Chlorsilber) AgCl	96
Ferriferous Platinum Pt, Fe	268	Embolite Ag(Cl, Br)	126
Oldhamite CaS	251	Bromyrite (Bromsilber) AgBr	79
Argentite (Silberglanz) Ag ₂ S	317	Hydrophilite (Chlorocalcit),	
Naumannite (Selen Silber) Ag ₂ Se	314	CaCl ₂	95
Hessite Ag ₂ Te	176	Fluorite (Fluszspat) CaF ₂	148
Galenite (Bleiglanz) PbS	71	Percylyte (Percylith),	
Clausalhalite (Selenblei) PbSe	314	PbCuCl ₂ (OH) ₂	260
Altaite PbTe	35	Periclase (Periklas) MgO	260
Bornite (Buntkupfererz),		Dysanalyte Ca-Fe-Ti-Cb-O	121
Cu ₅ FeS ₄	82	Pollucite H ₂ Cs ₂ Al ₂ (SiO ₃) ₅	269