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 ρ	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 crystals[2] 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.	Letter	Gdt.	Mill.		ϕ	ρ	ϕ	ρ
		0	001		— —	0°00′	— —	0°00′
1	c	0 ∞	010	Brilliant, but somewhat wavy	0°00′	90 00	0°00′	90 00
		∞0	100		90 00	90 00	90 00	90 00
		0½	012		0 00	26 30	0 00	26 34
2	e	02	021	Striated, irregular	0 00	63 30	0 00	63 26
		∞2	120		26 30	90 00	26 34	90 00
		21	211	Brilliant, well developed	63 29	65 58	63 26	65 54
3	n	½	112		45 00	35 20	45 00	35 16
		12	121		26 32	65 58	26 34	65 54
		1½	148		14 00	27 00	14 02	27 16
4	w	½2	184	Minute, curved	7 00	63 00	7 07	63 36
		48	481		26 00	83 00	26 34	83 37
		1½	124	Brilliant, but somewhat wavy	26 30	29 10	26 34	29 12
5	t	½2	142		14 08	64 02	14 02	64 07
		24	241		26 40	77 14	26 34	77 23
		¾	134	Minute, curved; present on one crystal only	18 00	40 00	18 26	38 19
6	H_1	⅔	143		15 00	54 00	14 02	53 57
		34	341		36 00	80 00	36 52	78 41

LISTS OF THE ISOMETRIC MINERALS INCLUDED IN GOLDSCHMIDT'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